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West Europe Report

SCIENCE AND TECHNOLOGY

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10 January 1984

WEST EUROPE REPORT
SCIENCE AND TECHNOLOGY

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ADVANCED MATERIALS

NETHERLANDS GROUP TO DEVELOP 'SUPER MEMBRANE'

Rijswijk PT ACTUEEL in Dutch 28 Sep 83 p 13

[Text] TNO [Netherlands Central Organization for Applied Natural Scientific Research] is developing a special membrane filter--superior to any now existing--that must be resistant to caustics, acids and high temperatures, and not clog too fast. The TNO Central Committee on Public Technology has closed a 3-year agreement for this purpose with the Wafilin Corp. in Hardenberg. The costs of the joint project are estimated at 1.5 million gilders. The Ministry of Economic Affairs is subsidizing the project in part.

The contract is unique in that TNO is not only conducting a research project but is actually participating financially and materially in the development of a new product. Primarily middle-size and smaller businesses could better profit through such a working arrangement from the knowledge and technology at TNO's disposal.

Among others, the TNO institutes in Delft, Utrecht and Zeist are involved in the membrane research. A first version of the new membrane is supposed to be developed by about the end of the year. A membrane is an advanced, extremely thin filter which can be applied in the analysis of liquid flows in the processing industry, the food industry--dairy and beverage--and the dye and paper industry. Membranes are also used in the desalinization of seawater, in treating irrigation water in horticultural businesses, and in purifying sewage. Six months ago, TNO began developing this new membrane, a membrane that must be superior to those already on the market. It must meet high standards relating to temperature and resistance to aggressive liquids. It must also be readily permeable for water--have a high flux rate--and yet retain substances suspended in water--have a high retention rate. Finally, it must be relatively simple to produce.

Wafilin will be a partner in further development of the membrane. Wafilin is a branch of the Waving Corp.--a manufacturer of synthetics--and specializes in membrane filtration, possessing extensive technological knowledge and experience in the field of ultra and hyperfiltration.

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ADVANCED MATERIALS

BRIEFS

COMPOSITE MATERIALS INSTITUTE IN FRANCE--A Composite Materials Institute, the first in France, has just been created in Bordeaux. Its purpose is to facilitate the transfer of technology for the benefit of PMEs (small and medium-sized enterprises). It will also be concerned with standardization in association with AFNOR (French Association for Standardization). Organized as an association, it gathers together the AEC, SNIAS, SEP, and the national aircraft company Marcel Dassault. It has received a first government subsidy of 2 million francs. [Text] [Paris ELECTRONIQUE ACTUALITES in French 11 Nov 83 p 3] 11,023

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AUTOMOBILE INDUSTRY

FRG MAKES CARBON-FIBER PLASTIC ENGINE MOUNT FOR AUDI

Duesseldorf VDI NACHRICHTEN in German 7 Oct 83 p 9

[Article by C. R.: "Carbon Fibers Support Automobile Engine: With the Same Strength the Engine Mount Is 70 Percent Lighter"]

[Excerpts] Wherever high strength and low weight are required the material of choice is the carbon-fiber-reinforced compound. A small company is now showing an engine mount for the Rallye version of the Audi Quattro which weighs only 0.6 kg.

Since the latter part of last year there has existed in Berlin a small specialized company which is developing high-strength temperature-resistant fiber compound structural components while aiming at the primary structures in automobile construction. They are developing a manufacturing process for small-scale homologized production based upon procedures that are now being used in aeronautical engineering. In the TER method (TER = thermal expansion molding rubber) the entire component can be manufactured in a single hardening process. This hardening does not require an expensive autoclave but only a normal heating chamber. The mold release takes place easily and the mold can be used repeatedly.

Within the framework of a project sponsored by the Berlin senator for science and research an engine mount for the Rallye version of the Audi Quattro has been produced by this technique. In making vehicles of this type any expense is acceptable when it comes to solving the problem: "Lighter at the same or better strength." As compared with steel, carbon fiber synthetic material offers at the same tensile strength a weight saving of 70 percent!

It is true that the normal engine mount costs only about 50 DM while, apart from the considerable developmental costs, one must reckon with about 1,200 DM in the case of a 50-piece production series of engine mounts made of carbon-fiber-reinforced synthetic material. For material and processing yield a price of about 2,000 DM per kilogram of structural component and the new engine mount weighs only 0.6 kg. This research and development project has been funded by the senate with 125,000 DM. Also Audi, where the engine mount is already being tested in a test vehicle, has contributed 40,000 DM to the project.

But the HMS Propulsion System, Inc, which was founded by and is managed by Dr Gudrun Leman and Dr Wolfgang Holstein, is also considering quite different components to be made of carbon fiber synthetic. These include high acceleration coordinate tables for laser scribes and structural parts of numerically controlled machine tools or carrying arms of industrial robots. Consideration is also being given to orthopedic aids and acoustic windows have already been manufactured for the acoustic sensors of the research icebreaker "Polarstern." These windows were 15 mm thick and had to resist every stress occurring at 10 meters' water depth.

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COMPUTERS

FRG'S NIXDORF TO EXPAND ACTIVITIES IN ASIA

Duesseldorf VDI NACHRICHTEN in German 7 Oct 83 p 34

[Text] Nixdorf Computer AG wants to increase its activities in the Asia area. In the coming years, according to a company spokesman, the ASEAN countries are to be developed into the "third leg" (after Europe and the United States) of the Paderborn concern. Nixdorf already has a marketing subsidiary in Singapore, where 200 people are now employed and a branch in Japan that is to be expanded. For Nixdorf, the Asian market is interesting not just for sales reasons; just as in the United States, there is a desire to offer a cooperative partnership to interesting and innovative enterprises in Asia.

In the United States, this strategy has turned out to be quite successful for Nixdorf. The company, present in the U.S. market since 1968 through a plant-representative contract with the Victor Comptometer Corporation in Chicago, has had "a large foot in the door of the most important computer market in the world" at the latest since its cooperation with and subsequent takeover (1977) of the Entrex Corporation. Klaus Luft, deputy chairman of the company, also declared that European enterprises cannot exist without direct association with the American market. For one thing, the technological development in the United States cannot be repeated either in Japan or in Europe. The Europeans and Japanese cannot catch up even with good state support and assistance. They must instead compensate through the opening up of new markets and access to innovations. After all, the U.S. companies are the main competition in the international market. Therefore, the European computer industry must indicate through its presence in the domestic market of the world's biggest and best competition that it can also be competitive.

For this year as well, Luft expects a "substantial" contribution to sales and profits from the Nixdorf Computer Corporation in Boston (NCC). In 1982, the company achieved sales of DM345 million and a profit of \$1.7 million, which is being reinvested. The main task of NCC, however, as Luft explained, does not involve the capture of a share of the U.S. market but the acquisition of new technology. To gain access to the developments of others, however, one's presence must be "quite strong," said Luft.

Nixdorf is thereby mainly interested in the technology for usable products in the area of information processing, products that must be internationally applicable and compatible with IBM systems. In the cooperation with U.S. partners, which Luft described with the metaphor of "being the leaven," one must see to it that there is fairness and that the partner is given a good deal of latitude. Otherwise, flexibility and imagination, often his main advantage, may be destroyed. This has probably already been the experience of many large concerns when they sought to include successful "newcomers" in their own network.

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COMPUTERS

DANISH COMPUTER FIRMS JOIN TO FORM EXPORT COMPANY

Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 28 Sep 83 p 4

[Text] Copenhagen (vwd-[United Trade and Industrial Services])--Six enterprises from the private and public sectors founded a new export company in Denmark in the computer field in order to give Danish exports in the EDP sector additional opportunities on the market. The enterprises reportedly are concentrating in their foreign business on the use of EDP equipment in the communications and word processing fields, offering hardware from foreign manufacturers. Plans are to open up new export markets first of all in the Far East (in the ASEAN countries.

The government or semigovernment enterprises Datacentralen, Kommunedata, and Jutland Telecom International participate in the new export company which is called Danish Information Systems A/S ("Daisy"). Kampsax International Store Nordiske Telegraf Selskab and OK Data joined from the private sector. According to data supplied by individuals familiar with this branch, the annual sales volume of the six enterprises as a whole most recently was definitely more than 1 billion drk [Danish crowns]. Daisy's goal is to get new foreign orders going and to act as broker in this area. On one particular project as a rule several enterprises participating in Daisy will cooperate here. Subcontracting opportunities however will result not only for Danish firms.

It was indicated that orders will be handled generally in the light of price and quality viewpoints. Sales possibilities for foreign offerors will probably result above all for EDP systems.

Daisy's tasks will be handled during the initial phase by the foreign agencies of the participating enterprises. The establishment of a separate affiliate is planned at a later date.

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COMPUTERS

FRANCE'S 'BULL' PLANS MICRO PRODUCTS, STRUCTURAL CHANGES

Munich COMPUTERWOCHE in German 7 Oct 83 p 18

[Article: "Bull: Cooperation 'From a Position of Strength': Encouraging Interim Balance After One Summer"]

[Text] Paris (eks). The reorganization of France's greatest electronic data processing manufacturer, namely "Bull," formerly Honeywell-Bull, is progressing well in the opinion of the management. The newly declared entrepreneurial goals are concentration of activities, new daughter companies and both international cooperation and especially European co-operation.

If good planning guarantees success then France's (and according to some statistics: Europe's) greatest EDP manufacturer can contemplate the future serenely. After takeover of the stock majority by the French government and after shrinkage of the American share to 19.9 percent after the reorganization there has also been a deletion of the first part of Honeywell-Bull's former double name.

Three Strategic Principles

The basis of all efforts to put Bull once again in the black is a sort of government contract between the firm owner, France, and the new firm management. This contract guarantees Bull first of all independence of ministerial intervention and a capitalization as high as 1.5 billion francs.

For this, ambitious goals have been set by the new management, president Jaques Stern and general manager Francis Lorenz.

In addition to its traditional activities as the manufacturer of middle-sized and large computers Bull is setting up a new business branch for office automation, micros and distributed data courses. Stern expects that the new activities will by 1986 have become just as significant as all previous ones. The available know-how in the area of large-scale computers should be "of special usefulness" in the "pitiless" competition of the digital data processing market. The new business branch will be active as of 1 January 1984 under the name Bull-Transac.

The micro activities with the computers Questar/M and Micral are being conducted in the future as Bull-Micral. Transac and Micral are expected to attain sales of 2.5 billion francs in 1983. A further daughter firm is to be established for marketing the CP-8 chip card.

Since hardware specifications are becoming progressively less and less interesting a path must be found from the "product formulation" to the "solution formulation." For this purpose Bull is going to intensify its activities in the areas of "technological support," "applications development" and "training." A new marketing organization with specialists for particular segments of the market is designed to achieve this.

While in marketing importance attaches to global solutions, the financial and technical instruments must be employed selectively.

Lorenz wants to concentrate upon products for which Bull has the requisite know-how and also upon products which are important for Bull's future expansive market position. Saying, "We shall not do everything and we shall not do everything alone," Lorenz promises technical, industrial and commercial cooperation in the future. But he leaves no doubt of the fact that this must take place from a position of strength.

Technological independence is the dream child of the French. At the JFJP Congress Stern admonishingly cited a U.S. Congress document of 1982: "To be the leaders in high-performance computers and their applications is an unconditional prerequisite of national security and economic development." According to Stern it is primarily political will which is lacking for the development of a European supercomputer. Engineering capability and knowledge are available. Finally there is the fact that the most important inventions in information technology originated in Europe. He declares that dependence is not only dangerous for the data processing industry itself but also in the end for the user who would be exposed to political and commercial duress in the absence of alternatives.

Mini-6 Remains the Primary Factor

However, Honeywell continues to be the most important partner. Last year's agreement which reduced Honeywell's capital share to 19.9 percent guarantees engineering cooperation for a further 10 years. In particular, the Mini-6 system remains the primary factor in the Bull-Mini offering.

In Europe Bull wants to be the locomotive for various types of cooperative activity. Important examples of this are the joint research center of Bull, ICL and Siemens which is to be located in Bavaria as well as the construction of a computer plant jointly by Bull, ICL and Siemens, GEC, Olivetti and the INRIA (Institut National de Recherche Informatique et Automatique).

Bull has a 7-percent share in the new "Amdahl Enterprise" "Trilogy" whose founder Gene Amdahl announced the week before a /370 on one chip. Additional forms of participation are in convergent technology, vertex and magnetic peripherals.

One Interlocutor

Stern acknowledged quite openly that the previous organization (CII-HB) had been clumsy and ill-adapted. The many new divisions will assume individual responsibility for development and production. On the other hand the previously autonomous sales organizations of CII-HB, Transac, Sems and R2E will be consolidated by the end of the year and will offer the customer a single interlocutor for all Bull services. One department called "General Assistance" will be responsible for the sale of micros and office automation products through distributors and software houses. A new management organization is being set up for guidance and control of the marketing organization of the divisions and daughter firms. In order to isolate this management organization psychologically from the previous bureaucracy the new management staff is moving into a new office near the Arc de Triomphe.

Lorenz finds encouragement and also approbation of the policy followed up to the present in a 21-percent higher receipt of contracts, 29-percent greater turnover and 30 percent more deliveries in the first half of 1983 as compared with the same period in the preceding year.

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ROLE OF GMD IN PROMOTING INFORMATION TECHNOLOGY IN FRG

Bonn VORWAERTS in German 25 Nov 83 Supplement pp 40-41

[Article by Anatol Johansen: "More Computers--Less Surveillance"]

[Text] The "Society for Mathematics and Data Processing" is preserving the FRG against electronic underdevelopment.

The United States and recently also Japan are in the lead when it comes to computer technology. The FRG is not in that same class. This is true even though the first "modern" computer was developed hereabouts in Berlin already during the 1940's.

In 1967-1979, we had no less than three different federal government promotion programs for electronic data processing. But these programs yielded just as little success as the endeavor to build up substantial competition against the Americans, who were controlling the market, through international cooperation among big firms in Western Europe. It remains to be seen whether new concepts for the promotion of information technology--about which Bonn is currently racking its brain--will accomplish more.

In this situation, which is not too favorable for the FRG on the whole, the GMD (Society for Mathematics and Data Processing) assumes special significance; with its 650 employees, it is being financed by the federal government and by the State of North Rhine-Westphalia. At any rate, in addition to the DFVLR (German Research and Development Institute for Air and Space Travel) and the Juelich KFA [Nuclear Research Institute], GMD is one of the three big research installations in North Rhine-Westphalia which means that NRW [North Rhine-Westphalia] accommodates one quarter of these research institutions--more than any other federal state.

But, while DFVLR, with its many different activities in the field of aviation and space, in energy research, and in many other sectors, is making a name for itself and while the KFA last but not least shines as a new original German development with that high-temperature reactor of its, which is now going through its initial tests in Schmehausen (Unna Kreis), the mathematicians and theoreticians of the GMD are not stepping before the public with substantial products that one can see and touch.

Their work is so complex that even the insiders are having difficulty in explaining them in a reasonably clear manner. Thus it says the following, for example, in a GMD prospectus: "The GMD is engaged in research and development work in the field of information technology for organizations. Sectors which are important in information engineering--from methodological and natural-science fundamentals via important basic technology aspects, systems engineering architecture, and design processes as well as innovative application systems, all the way to completely integrated information systems in organizations and government agencies--are of course distinguished by specific questions and problems in each case but are reciprocally interrelated in the information-technology context."

But substantial work is being done behind this verbal smokescreen of computer lingo. For instance, GMD makes its computer capacity available, with all of the pertinent service facilities, for scientific and administrative tasks. Besides, the economy and industry are being supported in their research in the computer field. There is manifold cooperation also with colleges and other research installations. An effort is likewise being made to get high schools and colleges to include the most essential concepts of data processing in their curricula; for instance, GMD noted the following verbatim: "Failure to master the fundamentals of data processing would lead to a new form of ill-literacy." GMD is advertising a programming language by the name of ELAN [expansion unknown] which was especially created for high schools and colleges. Individual programs, such as the TOP [expansion unknown] program for the optimization of school bus traffic using the smallest possible number of buses and many other user programs are being worked out with computer assistance.

Looking at it overall, one of GMD's primary missions is to make sure that the FRG will not fall behind in the important field of information technology, in data processing, and computer use and will thus not lose competitiveness on international markets.

The intention now is also to set up a liaison office in Japan in order not to lose connection with modern computer technology. This is so because Japan is in the process of consolidating its position among the leading industrial countries through the development of maximum-integrated circuits (VLSI--Very Large Scale Integration), optical electronics, and the fifth computer generation and becoming a center of information technology along with the United States.

The GMD however is not only concerned with technical questions but also with the effects of modern information technology in the social sphere. For instance, a data protection officer has been assigned to the executive board. GMD scientists themselves also stress that they were alert to the possible misuse of EDP for excessive control from the very beginning.

For example, a representative survey has just now been conducted in the FRG. It turned out that today at any rate 81 percent of the population are of the opinion that one can do a better job in keeping an eye on the citizens with computer assistance. But at the same time, 76 percent thought that computers help science, for example, in better identifying diseases. In response to

the question as to whether the subjects believe that computers as a whole bring more advantages or more disadvantages, 34 percent of those interviewed thought that the advantages predominate while 24 percent had the opposite view.

From the very fact that such surveys are being conducted one can see that GMD is also keeping an eye on the social effects of increased computer use and data processing, above all in the administration. Nevertheless, GMD certainly does not believe in the imperceptible development toward a police state which gathers and stores more and more data about each individual citizen.

In contrast to Sweden, where a proposal has been submitted to the effect that all possible data files be combined in order thus in the future to make population censuses superfluous and to assemble many different data about each individual citizen in a central place, GMD does not believe in such possibilities for the FRG. Dr Peter Hoschka, director of the Institute for Planning and Decision-Making Systems within GMD at any rate commented: "Such a proposal would be completely unthinkable in the FRG today. Nobody in the administration or in politics would ever dare make such a proposal. And this actually is also the reason why I consider this surveillance threat today to be much less than 10 years ago. Of course, today, on the one hand, we have better possibilities for implementing more surveillance. But problem awareness and therefore also the attention of politics and the politicians have grown so much in recent years that I am really very optimistic."

Even against the background of the increased and improved use of computer systems in the interest of German competitiveness--something which GMD after all is trying to achieve--Hoschka does not believe that this would create any special threats. "After all, you cannot blame the computer for everything," he commented in making a comparison. "One might just as well argue: 'We have many hammers in Germany and with every hammer one can kill a person; and the more hammers we have, the more killing capacity we would also have.' I am not trying to minimize this problem complex. But just as we have created regulations that do not permit the use of a hammer for the purpose of killing somebody, so do we have directives--for example, in our Data Protection Law--which forbid the combination of data collected for different purposes. And just as we have regulated many other things in our society, so are we also in a position to regulate this problem through corresponding laws."

GMD thus does not consider computer misuse to be a real danger or threat which one might not be able to counter. That, on the other, one cannot get along without the most effective possible computer use is something which was recently stressed by Federal Research Minister Heinz Riesenhuber during the presentation of his "Production Engineering" research program which, among other things, also aims at increased computer use in industrial production. "Anybody who today fails to keep up with technological change," Riesenhuber said, "is exporting jobs and is importing unemployment."

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COMPUTERS

EC MINISTERS AGREE ON 'ESPRIT' FUNDING

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German
9 Nov 83 p 5

[Article: "Support Funds for European Electronics: EC Council of Ministers Is in Accord/The Need To Catch Up in the World Market"]

[Text] Brussels, 8 November (vwd). The EC Council of Ministers reached broad agreement over the weekend in Brussels regarding the first comprehensive research program in electronics. With ESPRIT (European Strategic Program for Research in Information Technology) the EC aims at correcting its backwardness relative to the United States and Japan with respect to advanced technologies. The program provided for the period 1984 to 1988 aims at funding with a total amounting to more than 1.4 billion ECU, of which 50 percent will come from the EC budget and the other half from European industry. This surprising breakthrough was made possible by a shift in the French position. The French minister of industry Laurent Fabius has withdrawn the previous French demand that ESPRIT funding should be reserved exclusively to "authentically European" enterprises.

Fabius has announced in addition that the maximum limit of 400 million ECU previously set by Paris for the EC budget load is no longer being insisted upon. Instead France has now associated itself with the position of the EC commission, namely that the 5-year program requires budget outlays of at least 700 million ECU. Only two countries, the FRG and Great Britain, were still on the weekend unready to undertake these outlays. The German federal minister of research Heinz Riesenhuber justified this on the ground that consultations are still taking place regarding reform of the EC budget. Bonn, he said, would not be in a position to name any concrete figures before the EC summit meeting in Athens in the beginning of December.

Riesenhuber also referred to German misgivings in connection with the planned method of procedure in project decisions and also in connection with the policy, advanced in Brussels, of special treatment for small and medium-sized enterprises. But the minister added that "ESPRIT will not come to grief because of these reservations." With regard to the EC summit and with regard to a planned subsequent meeting of the EC research ministers in the middle of December the minister declared that the basis for a consensus was "clearly evident." Riesenhuber expressed the hope that within the framework of

financial reform the research and development fraction in the EC budget would be increased.

According to information supplied by Riesenhuber the EC Council of Ministers agreed upon a formulation according to which all "appropriate community firms and scientific institutes" shall be provided for in the distribution of funds. He said that this means that foreign companies whose daughter enterprises have been set up within the EC could in principle be taken into account by the ESPRIT program. The ESPRIT program includes as subdomains advanced microelectronics, software technology, information processing, office automation and computer-integrated manufacturing. In these areas the EC is at the present time limping along in the rear of its main competitors, the United States and Japan. According to data provided by the commission 8 out of 10 of the personal computers sold in Europe are imported from America and 9 out of 10 videorecorders sold in the EC come from Japan.

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COMPUTERS

SIEMENS REVAMPS 7500 COMPUTER LINE, REDUCES PRICE

Paris ELECTRONIQUE ACTUALITES in French 11 Nov 83 p 14

[Article by PM]

[Text] Siemens has just redesigned its own line of computers, the 7500's, which now can process 7 MIPS (million instructions per second). At the same time, the German manufacturer is offering its Fujitsu-produced models, compatible with IBM, at a new price. The price reduction is spectacular, amounting to 30-35 percent for the less powerful systems.

The line of 7500 central processing units, running under BS 2000 operating systems, designed by Siemens, is now expanded by seven new models.

The 7500 series, whose previous top model, the 7541, has progressed from 0.8 to 1.8 MIPS, now has three new systems, the 7550-B, D, and N, whose power ranges from 1.1 to 2.4 times that of the 7541.

Their core memory spans from 2 to 16 Mb, and the most powerful of these models, the 7550-N, is a dual processor equipped with two input/output processors and one maintenance processor.

Still more powerful, and still of Siemens design, four new models are offered in the 7570 series, the 7570-B, C, G, and P. The core memory of these systems is at least 4 Mb and can reach 64 Mb; their theoretical computing speed falls between 2.2 and 7 MIPS; and the B, C, and G models are composed of a CPU processor, two autonomous and reconfigurable input/output processors, and a maintenance processor. Additionally, the model N is a version in which all these elements as well as the core memory are doubled, and are provided with redundancy functions.

The manufacturer claims that some fifty of its 7500 computers are presently installed in France.

Significant Price Reductions

At the same time, only about ten of the other line of Siemens computers, the IBM 7800 compatibles, obtained from Fujitsu, exist in France for the time being.

It should be noted that the manufacturer introduced these systems much later than the other models, and that being much more powerful, they are less easy to install.

With such an inventory, Siemens must be third in France among suppliers of compatible machines, far behind NAS but on the heels of BASF, both of them Hitachi distributors. This 7800 line is henceforth distinguished by a distinctly better price/performance ratio.

The 7860-E, L, and R models, whose speed lies approximately between 2.7 and 4.5 theoretical MIPS, cost 30-35 percent less than they did previously.

For instance, the 7860-R dual processor costs a little more than 5 million francs in a basic configuration. The manufacturer thus expects to offer users a model whose power is equivalent to the 3083-E, at the price of a 4381-E.

At the top of the line, the 7890 models whose theoretical computing power is 7-27 MIPS, have experienced an average price drop of 5 percent.

11,023
CSO: 3698/153

COMPUTERS

BRIEFS

FRG-NETHERLANDS SOFTWARE FIRMS--Frankfurt--Harris GmbH has established a development center in the Netherlands for software with minicomputer applications, primarily for the European market. Its headquarters is in Woerden near Utrecht and it came about in close cooperation with the software company K + A, which was taken over by Harris. As the company announcement further states, Harris will have exclusive control of European sales of the most important K + A packets. It has also taken over all K + A employees for the purposes of the marketing, handling and further development of these software packets. In addition, a software training center for customers was set up in Woerden. The addition to its marketing program of the areas data-bank administration, project management and financial accounting complements the already existing program palette for Harris minicomputers and accommodates the wishes of customers for total solutions in individual specialties. It is said that in particular it is the users in the technical and scientific area who to an increasing degree are wanting to use their minicomputers for commercial tasks as well. [Text] [Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 5 Oct 83 p 4] 9746

OLIVETTI-PHILIPS FLOPPY DISKS--Nuremberg--The Olivetti subsidiary Olivetti Peripheral Equipment S.p.A. (Ivrea) and Philips Kommunikations Industrie AG (PKI, Nuremberg) have concluded an agreement on technical cooperation. As announced by PKI on Wednesday, new floppy-disk mechanisms are to be developed in the framework of the cooperation. The goal of the contract is to allow both European firms to produce highly developed and jointly conceived products on the economic scale that is necessary to maintain and improve competitiveness relative to U.S. and Japanese producers in the international markets. [Text] [Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 5 Oct 83 p 1] 9746

ITOH SUBSIDIARY IN FRG--Tokyo--In October in Duesseldorf, the Japanese commercial firm C. Itoh & Company will establish a subsidiary by the name of C. Itoh Electronics GmbH. As further reported by Itoh, the subsidiary is to be provided capital of DM1 million. The commercial firm itself will participate in the new company with 75 percent and the already existing German subsidiary C. Itoh & Company GmbH with 25 percent. The new company will be involved with the sale of small computers and related equipment, including printers and terminals. In the first year of its activity, the new subsidiary is to have a sales goal of 1.4 billion yen. According to Itoh, the objective is to have annual sales of 6 billion yen by 1985. [Text] [Leinfelden-Echterdingen DIE COMPUTER ZEITUNG in German 5 Oct 83 p 1] 9746

FACTORY AUTOMATION

FRG'S COMPREHENSIVE INDUSTRIAL AUTOMATION PROGRAM

Duesseldorf HANDELSBLATT in German 9 Nov 83 p 1

[Article: "Microelectronics To Be More Vigorously Promoted"]

[Text] kv Duesseldorf. In the German Federal Ministry of Research and Technology there is being worked out at the present time a comprehensive plan for promoting the development of microelectronics and for promoting information and communication technologies.

The German federal minister of research Dr Heinz Riesenhuber brought attention to this on the occasion of the opening of the Interkama '83 in Duesseldorf.

The minister emphasized that the creation of an appropriate context for a successful and growth-oriented development of an information-technological industry is considered by the German federal government to be "its most important and most vital constructive task." He said that this included in particular a substantially more innovative public funding but also included the creation of stimuli to greater availability of risk capital as well as broader education and training in information technology.

The new manufacturing technology program completed at the end of September by the German Federal Cabinet aims according to Riesenhuber at strengthening the market-economic structural adaptation of the small business technical manufacturing industry. The program aims especially at enhancing the in-house capacities of the enterprises by facilitating for them the step (involving high risk and know-how) of integrating modern information technology into the development and manufacturing process.

In this way the program will also make a substantial contribution toward job security in this industry in which about two-thirds of the jobs depend upon exports. By means of accelerated use of information technology in factories these enterprises could adapt themselves more flexibly to market requirements and thus more easily survive in competition. The program is to range over the period from 1984 to 1987 with a total of 530 million DM at its disposal. The minister emphasized that the technology policy of the German federal government is based upon a proper market-economic order in which it is above all

the enterprises themselves which must carry responsibility for research and development.

In the opinion of Prof Dr Gerhard Fels, director of the Institute of German Economics, there exists no ground for pessimism with regard to employment policy. He declares that it has been shown in the past that great advances in rationalization are accompanied by rapid increases in employment because these advances yield new methods of production and new products which enhance the competitive capability of the enterprises.

8008
CSO: 3698/139

FACTORY AUTOMATION

USE OF ROBOTS, COMPUTERS AT FRG'S DAIMLER BENZ

Duesseldorf HANDELSBLATT in German 30 Nov 83 p 21

[Article by Waldemar Schaefer: "Computers Are Helping Also in Control"]

[Text] 29 Nov--The billions of marks of capital expenditures made by Daimler-Benz AG in recent years have not merely helped to develop new automobiles such as the Mercedes 190 introduced this year or the next "medium-range" generation expected for 1984 (Model 200 to 280E). They have made it possible at the same time to increase production and to further improve it.

At a seminar on "quality in production," the technological objectives for the production sector of Daimler-Benz AG were described by Dr Werner Niefer, the board member with responsibility for this, in the following manner:

Good quality together with extensive flexibility and productivity

Ensuring progress in manufacturing through a balanced use of innovations

Mass-production reliability in the manufacturing processes and equipment used

Minimizing the energy input, the raw-material input, and the environmental impact due to manufacturing

Requiring and promoting productivity and a readiness to work on the part of workers through training as well as through organizing the working conditions.

For Niefer, the prerequisite for achieving these objectives was a production plan designed on a long-range basis. It is based on the integrating of the 11 domestic plants introduced by his predecessor Ulrich Rau, which Niefer systematically extended to the specializing of the plants in specific manufacturing sectors.

Concentrated Know-how for all Plants

According to Niefer, this has made it possible to develop a concentrated know-how which at the same time is also at the disposal of the other plants within the integrated setup. In the plants of Untertuerkheim and Sindelfingen, 1,100 specialists in production engineering are working on the development of this procedure.

In cooperation with other sectors, for example that of design, and together with the mechanical engineering section, it has proved possible to create a "quality feedback control system" which is supposed to not only ensure a good quality for the product, but also guarantee that mistakes are recognized, eliminated, and also reported back to the point in the manufacturing process where they arose as soon as possible. As Niefer stresses, the goal is "to produce quality" and not merely to control it.

As the production director explains, for Daimler-Benz quality is "not an absolute value, but a multitude of separate facets." These follow from the requirements of the market, of production trends, of the output, and of the environment, and they extend as far as the expectations the worker has in his job.

According to the Daimler production boss, this quality strategy aims at "appropriately weighing" innovation, functionality, and economic efficiency "against one another." A quality policy is not static, he said, and cannot be merely that of maintaining a given quality. It requires a continuously ongoing optimization process, even with respect to lines which have been firmly established for a long time. "Top quality--like that which we insist on--presupposes that at all times the newest state of the art for product and production technology is applied in the manufacturing plans." Niefer stresses that "this quality is the result of the best possible cooperation of person, machine, and organization on all levels and in all sectors of the business."

In contrast to competitors at home and abroad, at Untertuerkheim reliance is not placed solely on robots or other alternatives of mechanization. On the contrary: To Niefer and his top assistants, Graduate Engineer Wolfgang Jacobi (technical head of the Sindelfingen plant, which employs 38,000 workers) and Graduate Engineer Hermann Haug (technical head of the Untertuerkheim plant, 35,000 workers), the unattended "ghost factory" seems to be ill suited for achieving the quality goals they themselves have set.

Total of 400 Robots Are Already in Use

Nevertheless, by no means are they doing without automated machinery. For one thing they are using transfer lines, which are single-purpose systems tailored to certain models; these must be scrapped after their phasing out. In addition Daimler-Benz is already using a total of 400 robots for flexible automation at present. Furthermore the possibilities which computers offer are also being used extensively: Beginning with computer-

aided design (CAD) and computer-aided manufacturing (CAM) and extending to computer-aided inspection (CAI).

But the following example from the assembly plant of Sindelfingen should reveal how much importance is given to the person: The man on the assembly line slams shut the back door of a Mercedes sedan three times. After that he carefully checks out the door crack visually and by feel, above all at the location of the catch. Then he picks up his tool, opens the door again and readjusts it at the hinges. After that he slams the door shut two more times, and only when the sound of the "Mercedes bang," as it is called in the United States, is to his liking does he finally shut the door and go on to the next vehicle.

Such an effort not only costs money, it also also prevents the final assembly lines at Daimler-Benz from being able to have as small a human contingent as is the case with many large-scale automobile producers, for example in Japan. But for those in Untertuerkheim, their success in the marketplace, which is based in part on this painstaking attention to quality, confirms the correctness of their conception.

Nevertheless, the fact that mechanization and automation are not being renounced but that all new alternatives are being used is shown also by another example of the use of robots at the Untertuerkheim assembly plant which likewise ensures good quality: In the axle production, two robots do the welding on the highly complicated "spatial-steering axle," which makes it possible to be assured of a comparable comfort even in driving on difficult curves, while it has only half the weight of customary axles. The electronically controlled machines are able to weld together with extreme precision the separate parts of the spatial-steering axle over a period of more than 8 hours. This could neither be demanded nor expected of a human welder.

At present a comparable use of robots is also being tested on the painting line at Sindelfingen. There, two new robots are spraying the car bodies at the spots where the automatic painting machine following these cannot satisfactorily reach. Up to now, two painters had had to "cover" these spots-- bottom edges of doors, and so forth--by using a spray gun. This was extremely troublesome work. In the future the use of robots will not only lessen the stresses on the painters, but also contribute to environmental protection, since the work can be done with a smaller air flow rate and thus with less exhaust air generated.

But in other places as well automated devices and equipment are relieving persons of dangerous, difficult, and otherwise stressful work; for example on the die-pressing lines, at which the tool changing now occurs considerably more rapidly and less dangerously as well as with less effort by the use of sliding tables--which of course are used elsewhere as well. Furthermore, an attempt has been made recently to employ a "pickup robot" (of a simple design) for loading and removing the pressed parts.

If this works satisfactorily, it will also be able to pass parts from one press to another considerably more quickly than human workers can. Although at Daimler-Benz it is not assumed that on the whole the robots will cause a great reduction of workers, nevertheless on the press line, at which noise and unpleasant vibrations cannot be avoided, some of the workers can be dispensed with.

However, Daimler-Benz is showing the most spectacular form of the "new technology" in its linking of design with production and quality control which is made possible by way of data processing. Computer-aided design (CAD) is basically nothing new. But up to now, the graphic representation of surfaces has been difficult, for example.

In the Future, Computer Tapes to the Subcontractors as Well

It is true that the assumption at Daimler-Benz is that its own self-developed graphics computer program, which is regarded as very advanced, is even surpassed by the system of General Motors. But in its linking of the design program with operations scheduling and production, it finds itself in first place worldwide. Thus, for example, the design computer can directly control machines which mill, turn, drill, and grind parts for the prototypes--either entire car-body parts or else single components.

The more far-reaching possibilities in the future consist in handing over program tapes to subcontractors for their computer-controlled machines instead of the technical drawings for the delivered parts. This ensures that the "master dimensions" used by the designers cannot be readily "falsified" in the direction of greater tolerances upon their transfer to and from drawings.

These "master dimensions" also go from the design computer to the measuring machines. Furthermore they are also used for the manufacturing of all the measuring tools which are needed for the continuous control of production. Since in this way at every point in the production measurements can be made with the data which have been specified by the designers--thus no transfer mistakes are possible in conveying the measurement data--one can keep the tolerances extremely small in the production process.

But conversely it is also a part of the quality feedback control system of Daimler-Benz that from every point of the quality control--and this ranges from separate components to semiassembled and entirely assembled vehicles--mistakes are reported back immediately to the point in the production process at which they arose.

Since units such as transmissions and engines must be tested not for their dimensions but for their performance or the generation of noise, operational monitoring systems have been built at a high cost in capital expenditure which do the testing largely automatically. For example they

"run" the engines according to a predetermined cycle--that is, they operate them under load.

The same thing is true of the axles and transmissions. But here once again man and machine are combined. Thus the noise of the rear axle in operation under load conditions is measured not only by the sensors of the computer. On the contrary: In addition the testing specialist also gives his subjective judgment here on whether he finds the transmission to be more or less loud.

Such inspections are not only useful in the effort to make vehicles as quiet as possible. Indeed, even a minimal noise is considerably amplified by the sedan body, which has the effect of a violin-case (sounding board). But in addition noises also signify above all a greater loading of the gears and thus a more rapid wearing of axles or transmissions.

That the checker is very critical in his judgments is proved by the fact that in the presence of a group of journalists, none of whom were able to hear any particular sound at a rear axle, one of these checkers gave this unit a grade of only "C." But to ease the mind of the future owner in whose vehicle this axle is being installed, it was stressed that even a transmission with a grade of "D" is fully acceptable. Only if the assessment turns out to be worse than this does the axle go back to the axle plant.

12114
CSO: 3698/168

FACTORY AUTOMATION

SWEDEN'S ASEA DEVELOPS ROBOT FOR ARC WELDING

Duesseldorf VDI NACHRICHTEN in German 25 Nov 83 p 17

[Text] The Swedish Electrical and Electronic Enterprise ASEA [General Swedish Electric Company] has developed a robot work package for arc welding, consisting of an industrial robot with specially developed controls for welding tasks, as well as an optical sensor and a microprocessor which analyzes the sensor signals and transmits the result to the robot control's adaptation function.

The "Optocator" optical sensor is a development by the Goeteborg Enterprise Selcom Company. It has a resolution of 0.06 mm, a measurement distance of 175 mm, and a range [sweep] of 32 mm. The welding seam robot itself has an accuracy of ± 0.4 mm.

During arc welding, the robot guides the welding gun along a pre-programmed path. Flawless welding requires accurate positioning of the weld bead with tight tolerances. This is difficult particularly in large work pieces if the robot itself does not accurately position the welding gun.

During the search using the "Optocator," the welding joint is defined in three dimensions and the welding gun is at the same time positioned accordingly. This process takes about 1.5 sec. But frequently searching in two dimensions will be enough. During the search, the arc is not yet ignited. The robot is programmed in accordance with the material thickness and the desired form of connection (blunt joint, overlap, fillet weld, etc.) and the welding parameters are corrected automatically.

The welding seam search robot can be used especially for thin sheet metal starting with a thickness of 0.8 mm if many short welding seams and short welding times are required, as in welding motor vehicle bodies and parts of the wheel suspension.

5058
CSO: 3698/171

AUDI INVESTS DM 2 BILLION TO BUY ROBOTS, AUTOMATE PRODUCTION

Duesseldorf VDI NACHRICHTEN in German 5 Aug 83 p 14

Article: "Mechanization Potential Fully Exploited"

Excerpts In almost all cases the newest factory is also the most modern and most rationally structured for production. Many Japanese successes can be traced back to this production planner's maxim. If, also, a new automobile model is to be produced in the new buildings, then the product and manufacturing methods can be optimally tuned to one another. After a year of manufacturing planning with the "Audi 100," the manufacturer struck an all-around positive balance: New manufacturing technologies have paid off in production; automation lowered costs and raised quality.

During the past 2 years, Audi-NSU has invested about DM 2 billion in new products and associated production facilities. Fully half of this was spent on restructuring the factories. The north paint shop in Ingolstadt was the first renovation project. It created space for restructuring body manufacturing and assembly. The task requirements list for the Audi-100 included for example the development of new manufacturing techniques. Bonding in the front and rear window panes for example did clean up aerodynamic drag, but it also gave rise to body tolerance requirements which are a factor of 10 more difficult to meet than in the past. For the doors, whose frameless panes rest on an aluminum lift mechanism, a steel-aluminum welding process was developed to production maturity. For better corrosion protection, the floor panel was designed to be made as a single piece and all flange joints to the body were moved away from areas most in danger of rusting. In addition, all body parts were redesigned for automatic handling and joining since, with the new model automobile, robot application at Audi-NSU is to be expanded. In Ingolstadt alone, 106 welding robots are at work on the Audi 100.

But such prerequisites also change the body construction sequence. It starts with setting the floor plate on the rear wheel housings. Several steps are required to complete the floor group, which the Ingolstadt plant also makes for the production plant at Neckarsulm. This work is accomplished by fully mechanized multipoint welding units for the largely nonflexible portion of the body buildup.

The floor group is expanded to the substructure. Several multipoint welding units are also used in this work while freely programmable welding robots place the remainder of the 3,900 total welds. A hole code on the floor plate controls the fully automatic parts conveyor which usually brings parts from the floor below the manufacturing level. Fork lifts are no longer seen on the body assembly line.

In the truest sense of the word "critical" for parts accuracy is station "A" on the rigging line. Here, a clamping frame forces the until now only loosely tacked side parts into the exact welding positions and holds them securely while seven robots weld them together at the statically determining points. This installation permits two completely different body designs with type variants to be manufactured as a random mixture since their type-related clamping frames can be automatically interchanged under computer control between two work sequences. And the precision of this shaping process is controlled both by human and regular computer controlled measuring machines true within $\pm 2 \mu\text{m}$.

Computer Coordinated Reserve Robots

At the end of the conveyor, reserve robots are standing by in case of equipment failure. In the shortest time, they can jump into the assembly line, just as soon as the Siemens computerized controller localizes a failure. Also, the conveyor is divided into several manufacturing sections between which are located buffer sections which fill the gap during maintenance on a conveyor section.

Hand work which used to dominate in body building has almost died out. It is still used for installations and other tasks wherein automation offers no economic advantage. Thus, the demand for human assembly-line labor has dropped to a seventh of its previous value. However, this has occurred without layoffs: Audi expanded its production volume and variety, thereby significantly increasing the demand for people in other parts of the factory. In the new factory, conventional automobile-factory organization was thrown overboard. Through job enlargement and job enrichment, the individual's activities greatly increased in variety.

Yet in addition to personnel savings, increases in quality, and automatic evaluation of tolerance slippages and requirements for adjustment by measuring machines, the new organization for body building offers still other significant rationalization effects. As an example, the greater process assurance of the automats has made it possible to reduce the number of welding points by about 30 percent in comparison to previous models. Thus Audi is now going in numbers which are customary for the Golf and Passat models.

Automatic body construction is however also much cheaper than annual construction. And this is not due just to fewer manhours but is primarily due to the fact that equipping an assembly line with flexible, not-model-dedicated equipment in the form of freely programmable robots permits future model changes without having to scrap the entire set of obsolete manufacturing tools. The work program of the nonflexible floor assembly and the three stations with multipoint welding equipment in both factories will be left unchanged as long as possible. In addition, in future model changes it will only be necessary to reprogram, to

re-equip--possibly with new grippers and tools--and to reposition the 260 welding robots; whereupon, production can be resumed. About 80 percent of the new facilities in this area are fully flexible. Planners estimate their lives at between 6 and 15 years; the amortization threshold is expected to be breached after 2 to 3 years.

However, the biggest chunk of both projects, with an investment of about DM 270 million, is the new assembly area for which a special five-aisle, two-story building with 73,500 m² of manufacturing space was built. The objective was to lower the personnel density per work cycle from 7 to 8 to 2 to 3 by lengthening the assembly line.

Work Will Undergo Further Changes

This personnel intensive part of an automobile factory should still offer sufficient space for stepwise mechanization of the work stations. Accordingly, the decision was made to provide a separation of 14 meters between parallel production lines. A total of 9,033 m of conveyor belts was installed.

On the ground floor are located supplies, parts, preassembly and subassembly inspection; the upper floor is dedicated to the primary activity, final assembly. The painted bodies come out of the also newly built body-storage area (DM 10 million), a three-lane, elevated-rack buffer with 324 slots and a throughput of 800 bodies per shift. This unit completely decouples the last assembly station from the preceding stations. This makes it possible to load the assembly conveyors in the optimal processing sequence as determined by a Siemens' computer installation.

The bodies are mounted on two parallel conveyors; and these are divided again into two lines in the inspection areas, doubling the work-cycle length in these areas. At the first conveyor section, the bodies are fitted to height-adjustable skids; farther on, the bodies are picked up by overhead conveyors which run at variable heights and which hold the bodies in various angular positions; finally, at the end of the assembly line the automobiles are placed on their own wheels. Each of the lines contains 140 job cycles. In each case, the job is presented to the work station in the optimal attitude from the standpoint of ergonomics. And 11 work cycles have adjoining rework sections so that all rework is accomplished on the conveyor during throughflow and not on separate islands off the conveyor.

After each system--brakes, hydraulics, cooling--has been evacuated to 0.1 bar and leak checked, it is automatically filled. Full specification values of the fluids are sucked bubble-free into the evacuated cavities. On a specially developed shake stand, road vibrations are simulated for all vehicles, thereby uncovering loose screws and supports and various rattles and squeaks so that the customer does not have to put up with these in the future.

9160

CSO: 3698/151

FACTORY AUTOMATION

BRIEFS

SIEMEN'S 'VIDEOMAT' SEEING ROBOT--Siemens is now offering under the name "Videomat" a system which can identify previously stored shapes with distinct contours in any orientation. First, a video camera takes a picture which is next reduced in an evaluation unit to its distinguishing features--lines and strong contrasts--and finally compared with stored data. If a part is recognized, its code number as well as its centroidal coordinates and angle of rotation are sent to the robot which can then grasp and process the object. The operator can carry on a dialog with the system and oversee the overall process via a monitor. Special prior knowledge is not necessary; a short training period suffices. The Videomat's job is made easier by high-contrast printed or embossed codes and numbers which it uses to identify the parts: Reading is no harder for the Videomat than seeing. /Text/ /Stuttgart BILD DER WISSENSCHAFT in German Aug 83 p 30/ 9160

BRITISH-JAPANESE ROBOT COOPERATION--The British firm Badalex Ltd has entered into an agreement with the Japanese Pentel Co concerning the European distribution of the Pentel SCARA (Selective Compliance Assembly Robot Arms) industrial robot. This is the Japanese manufacturer's first export agreement. The agreements will be signed shortly according to a Japanese report. /Text/ /Duesseldorf VDI-Z in German Jul 83 p VI/ 9160

CSO: 3698/151

MICROELECTRONICS

ITALY'S ELECTRONICS INDUSTRY LOSES MARKET SHARES

Wuerzburg ELEKTROTECHNIK in German 26 Sep 83 pp 8, 10

[Text] Italy's electronics industry has in the recent past lost important shares of the market. This negative tendency is primarily attributed to competitive weaknesses and especially to structural weaknesses. This tendency according to a prognosis by the Electronic Research Institute Reseau will persist into the near future. The investigation by this research institute, which is based on the Italian, the French, the British and also the German market, also reports on a drop in the Italian production share and also in consumption measured against the total volume of the four countries. While the Italian electronics industry's share in the total production of the four countries was still 9.8 percent in 1982, by the year 1987 it will have dropped to 7.8 percent according to the study. The Italian sales share will also lose ground in the next 5 years.

This retrograde development which was already clearly evident in the first quarter of 1983 is attributable to both competitive and also structural factors. The recession in the internal domestic market and weakness of international demand have led to a production minus of 4.5 percent measured against a comparable value in the first quarter of 1982.

Altogether last year Italy has had electronics imports amounting to 4,687 billion lire (plus 22 percent) while exports rose by 47 percent to 3,587 billion lire. The foreign trade deficit of 1,100.7 billion lire is one of the highest branch deficits in European electronics business. Imports are especially heavy in the area of electronics investment goods (3,516 billion lire).

In foreign trade involving measurement devices, control and regulation technology, scientific instruments and medical devices Italy exhibits a rising deficit. On the other hand in the case of electronics equipment there has been a surplus. Among structural elements imports preponderate both in the case of active and also passive components. The domestic entrepreneurs are troubled particularly by the increase in the import of semiconductors (plus 22 percent) as well as imports of vacuum tubes. Positive features emerged last year in the export of items in the area of information technology (plus 31 percent), especially in the case of electronic office machines (plus 40 percent).

8008
CSO: 3698/157

MICROELECTRONICS

THOMSON'S CURRENT, PROJECTED EARNINGS IN ELECTRONIC COMPONENTS

Paris ELECTRONIQUE ACTUALITES in French 11 Nov 83 p 38

[Article by JPD: "Thomson-Components on the Way To a 1983 Revenue of 4,500 Million Francs"]

[Text] Grenoble--Thomson-CSF will end up well ahead in the components game this year, since its consolidated earnings will grow by 15 percent to 4500 MF (million francs) while the profession as a whole expects a growth of 11-12 percent. The growth of the French company is quite notable in exportation (+18 percent to 1700 MF; 28 percent to 1150 MF directly from France), but it is also remarkable in France given the circumstances: +14 percent to 2800 MF.

This growth would of course be very fragile if the company's losses were not kept in check. And indeed, these losses are headed toward stabilization followed by a reduction in the coming years: Mr Stark, director of the Electronic Components Branch of the company clearly announced during his press conference on 3 November, that Thomson's major objectives in components were to become profitable (no division must experience any further losses in 1986) on one hand, and on the other hand to achieve a world-class size (3-6 percent of the world's production overall).

Obligatory World-Class Size

Mr Stark's press conference was very well attended, not only because we had had no news about Thomson-CSF's components activity for one and one-half years (since the preceding Show), but also and especially because it was the first press conference of the new executive team that has been leading the branch for one year. And while Mr Stark's discretion in answering the reporters' question was more or less well received by the latter, it in fact concealed a candor on his part: the new team is ambitious, with big projects, but by the same token, its internal maxim has become "accumulate before announcing." Moreover, while plans have been drawn, and while the investments to be made have been defined, the corresponding credits have not yet been freed, even though Mr Stark declared that "we have no reason to doubt the shareholders' decision." Under these conditions it is therefore understandable that some of

the answers were at times imprecise. Mr Stark nevertheless admitted that his investments had been of the order of 500 MF in 1983, which represents a continuity with respect to the previous years, but that he hoped to be able to increase them by 50 percent in 1984, in which case one could speak of a new departure for the company, which would thus acquire the means for its ambitions. In principle, semiconductors have priority and would receive 80 percent of the investments.

Thomson's nationalization was not very prominent in Mr Stark's comments, except for one essential point: "We must first of all serve the Thomson group and the French industry," he declared, which excludes any policy of niche opportunity.

The branch's leaders drew the obvious conclusions: the branch will have to cover 3-6 percent of the world market by 1990, for the lines of products which concern it; otherwise, its manufacturing runs will never allow it to achieve profitability. And we all know the temporal fragility of unprofitable activities!

World Market of \$62,000 M in 1986

During his conference, Mr Stark recalled the context in which his company operated, and in particular the evolution of the components market, a market which amounted to \$38,000 M in 1982 (49 percent passive devices, 36 percent semiconductors, 10 percent tubes, and 5 percent others), and which should reach \$62,000 M in 1986 (37 percent passive devices, 49 percent semiconductors, 7 percent tubes, and 7 percent others). In 1982, the leading component manufacturers in the world were: IBM, Philips (\$2250 M), TI (\$1460 M), Matsushita (\$1410 M), NEC (\$1370 M), and Motorola (\$1221 M). Compared to these leaders, Thomson has a turnover of \$700 M.

In France in 1982, the market was 16,400 MF and production reached 14,200 MF (51 percent passive devices, 27 percent semiconductors, 14 percent tubes, and 8 percent hybrid and various other devices), with Thomson weighing in at 5200 MF with components outside of the Components Branch (Videocolor, Orega E.M., and so on). Mr Stark also indicated Thomson-CSF's position in semiconductors in Europe: in this market, the largest 1982 revenues were obtained by Philips (\$494 M), followed by Siemens (\$328 M), Thomson-CSF (\$184 M), SGS (\$175 M), Telefunken (\$150 M), and Ferranti (\$82 M).

For Mr Stark, the milestones of 1983 were the concentrations of the industry (IBM participation in Intel's capital, the move of Amphenol and Bendix under the United Technology umbrella), and the recovery of the world market outside of France. For Thomson, of course, the major event will have been the Thomson-CGE merger intentions "which have no reason not to be implemented."

Nearly 1500 MF in Semiconductors

In 1983, the distribution of the consolidated 4500 MF of the Components Branch will be: 38 percent passive devices (9 percent of which in connectors), 33 percent semiconductors (one-half discrete, one-half integrated), 25 percent

professional tubes, 13 percent specific and various devices (hybrids, microwave, and so on). The turning point will thus be the achievement of nearly 1500 MF in semiconductor earnings. In order to better manage the 15 basic activities, Mr Stark has reorganized the branch by entrusting the responsibilities to a small number of people, depending on types of competitions, technologies, and customers. Six directors are thus responsible for tubes, semiconductors, passive devices except connectors, connectors, hybrids, and microwave components, added to which are an international trade and internal coordination directorate, as well as a USA directorate.

In 1983, the research and development activity represented 18 percent of the branch's turnover, without including the two-thirds of the Central Research Laboratory of Thomson-CSF.

The CGE Spur

Mr Stark considers the agreements with CGE as very positive, for two reasons: on one hand, the wish to open exchanges should open CIT's equipment market to Thomson-CSF (in particular for the dissemination of custom circuits which Thomson could not make before, because of competition with the new system), and on the other hand, the merging of components forces should lend more weight to Thomson-CSF's components on foreign markets.

While the acquisition of Semiconducteurs Alcatel by Thomson-CSF is certain, and while it will undoubtedly obtain CGE's piezoelectric activity, the ways and means for connectors and optical semiconductors still remain to be defined. The liquid-crystal flat display activity is sure to go to CGE, in order to support its office automation and terminals operations.

World's Second Position in Tubes

While deeming that the tube activity does not return enough profits, Mr Stark nevertheless likes to point out that it will amount to 1140 MF (+16 percent) this year, with foreign sales representing 38 percent (+24 percent). Thomson-CSF is thus second in the world in this field.

Among passive devices, condensers were the only ones worth mentioning: in 1983, this activity represents a turnover of 364 MF, with 41 percent of the sales being made abroad. No mention of growth was made, but a doubling of the multilayer film capabilities was announced for the near future, with particular efforts to also be made for ceramic multilayers and power condensers. Mr Stark was very discreet about the possibility of dropping passive devices activities, an eventuality which would however be natural if he wants to eliminate the losses in this sector.

Semiconductors remain a major area for Thomson-CSF due to their strategic nature for equipment and the growth of the world market: 15 percent/year for the long term, 25 percent/year for the short term. In discrete semiconductors (in which the branch is ninth in the world), priority will be given to the development of thyristors and power transistors. In integrated circuits, the

goal is to move from 1 percent to 3 percent of the world market. New agreements will be signed to consolidate various positions. Beginning in 1983, the number of export sales engineers was increased by 50 percent, and operational divisions are being formed. The results are already spectacular (it is true that they are helped by very favorable world conditions and dollar exchange rates): between the first and third quarters, billings have increased by 20 percent for discrete semiconductors and by 45 percent for integrated circuits (+35 percent in all). Orders have progressed by 30 percent for discrete semiconductors and by 90 percent for integrated circuits (+60 percent in all), essentially thanks to the fact that the orders were spread out over a given time period. Performance for 1984 therefore appears good in this area, and we will discuss it again later.

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MICROELECTRONICS

LETI TO DO APPLIED RESEARCH, THOMSON TO STEP UP IC WORK

Paris L'USINE NOUVELLE in French 24 Nov 83 p 49

[Article by Claude Amalric: "Integrated Circuits: At Last, a Credible Industry"]

[Text] "If Thomson does not succeed this time, it will never succeed." This remark is a good illustration of the new image which the group has acquired by changing its structures and its personnel. All the more so as the group is now supported by public research, especially by the LETI [Electronics and Data-Processing Technology Laboratory].

The French integrated circuits industry is now taking a decisive turn. Until now, production had been its weak point; but men experienced in this field have now been placed in charge by Thomson. On the other hand, research is not neglected: the decidedly industrial orientation of the Atomic Energy Commission electronics laboratory in Grenoble (LETI), was confirmed at the components show.

"From now on, we will be an applied research company concerned about profitability. No more innovation for the sake of innovating." This is how Jacques Lacour, one of the founders of LETI and its new director summarizes two years of in-depth restructuring.

In concrete terms, a model 12,000-square-meter laboratory will become operational early in 1984; but the first major industrial deadline is the transfer of a one-micron CMOS [Complementary Metal-Oxide Semiconductor] division to Thomson within the next two years, which should give the group a powerful weapon in making competitive products. "In this transfer, we shall give the client more extensive support than ever before. In the case of an integrated circuit production line implementing several basic technologies, the LETI will supervise production startup at the manufacturer's."

This attention given to development has already borne fruit. Thus, a PME [small or medium-size enterprise] in the Lyons area, CORECI [Industrial Regulation and Control Company], sold in 1983 close to 10,000 units of a sensor developed by the LETI the year before. It is expected to be a worldwide success.

"We are adjusting our relations with the industry so as to make our investments as profitable as possible." Jacques Lacour emphasizes that most of these investments represent an act of faith. "The decision on the great Laboratory was made at a time of widespread discouragement, when everything was going down. It will be an extraordinary tool that will make the Americans and Japanese envious..." A laboratory which Thomson will not have to build; and the best possible form of public aid, which will be reinforced by the aid provided by the Norbert-Segard center of the CNET [National Center for Telecommunications Studies], a neighbor of the LETI and, until now, its competitor in certain fields. An obvious waste.

To avoid duplicating research, the CNET and the LETI have created joint working groups which suggest what research could be undertaken. A joint program committee acts as an arbitrator and distributes the tasks.

At IBM, Production Dead Times Are Minimized

At Thomson, the industrial pole, public research scientists will find men sharing their concern for efficiency. The two "integrated circuits" divisions of the group have just been placed in the hands of dynamic and experienced field men. Marc Lassus, former manager of Matra-Harris Semiconductors (MHS) in Nantes, is in charge of metal-oxide semiconductor circuits--two thirds of the circuits sold worldwide. Philippe Geyres becomes manager of bipolar circuits. He used to be manager of very-large-scale integration circuits at Fairchild in California. At age 30!

Actually, the experience of this Polytechnical School graduate who chose to work for the industry already included six years spent at IBM at Corbeil. "I noticed how much production dead times were minimized at IBM. The passage from the laboratory to the plant occurred smoothly, without any production interruption: the computers used the same language, which is not always the case."

At IBM, Philippe Geyres acquired experience in production control, then in management. "In that company, people spend a lot of time reflecting on organization. It is extremely profitable. At Fairchild, I found an entirely different and very complex structure, with good and bad sectors. When Thomson approached me, I was manager of planning and production."

To convince Philippe Geyres to leave his position and join Thomson to restart a division, it took convincing arguments. "I had long discussions with the new semiconductor team and the management. Frankly, I found no time-lag between what I knew of IBM and Fairchild and these professionals who all come from the same American integrated circuit school, whether its name is Texas Instruments, Motorola, Fairchild or National Semiconductors."

A clear structure, independence, the means to reach a given objective: "By 1990, we should have 3 percent of the world integrated circuits market--the profitability threshold." Already, sales have doubled in one year. But to reach its goal, Thomson will have to rise from the 21st to the 10th rank in the list of large producers. A rank which now belongs to Fairchild...

MICROELECTRONICS

BRIEFS

THOMSON SPECIAL CIRCUITS DIVISION--The Thomson-CSF special circuits division will expand rapidly in 1984. This year, it has already moved to its new 1,600-square-meter buildings near Grenoble and its personnel now includes 55 people, 20 of whom are engineers. It has a VAX 11/780, a PE 32/30, a Calma GDSII plotting center, a testing center including a GR16 logic tester and an LTX80 linear tester, and also a small prototype assembly laboratory. The Paris office has a staff of 7. As is known, the mission of the division is to offer a whole range of services in the field of semi-standard (prediffused and precharacterized) integrated circuits, in CMOS [Complementary Metal-Oxide Semiconductor] and in bipolar numeric or analog technology. The services offered thus range from specifications to foundry level. [Text] [Paris ELECTRONIQUE ACTUALITES in French 18 Nov 83 p 34] 9294

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SCIENTIFIC AND INDUSTRIAL POLICY

VDI PATENT OFFICE IN FRG RECEIVES SOVIET DOCUMENTS

Duesseldorf VDI NACHRICHTEN in German 7 Oct 83 p 49

[Article: "Patent Documents From the USSR: Disclosure Office in the VDI-House Invites Examination"]

[Text] The Patent Disclosure Office in the VDI [Association of German Engineers] which was opened in May in Duesseldorf has been augmented with the Russian patent document collection. Besides the German Patent Office in Munich, the VDI is thus the only office which has been granted the capacity to examine the original "Official Communications of the State Committee of the USSR for Affairs Relating to Inventions and Discoveries." The collection goes back to the 1960 issue and contains short specifications together with characteristic drawings of the patent applications in the USSR together with publication of registered trademarks.

The Patent Disclosure Office in the VDI-House has for about 5 months been available to industry and free-lance inventors. Why does it make sense at the start of a developmental study to inform oneself thoroughly regarding the technological status? According to statements by the chief of the disclosure office Dipl Eng Eberhard Kuebel there could be a substantial saving of development costs and the costs of fruitless patent applications through prompt research in the area of the invention's subject heading. However, it may be said that the information made available here for developmental studies is too little used. One reason for this is certainly inadequate knowledge of the existence of the Patent Disclosure Office; another is the fact that access to patent documents is made more difficult by their specialized terminology. The disclosure office in Duesseldorf is making determined efforts to combat this situation by giving expert advice to persons visiting the office, introducing them to the use of the patent classification system and to interpretation of patent documents. Questionnaires submitted in writing are researched by the staff in the disclosure office.

A further service makes it possible to supplement each research with a bibliography under the invention's subject heading. For these purposes there exist in the VDI business office a terminal of the FIZ-Technik (the Technik Scientific Information Center) which makes it possible to interrogate a multitude of national and international data banks for literature references and for references to engineering regulatory publications. The costs of an

individual search in the Patent Disclosure Office range between 25 DM and 50 DM; on the other hand the costs of a contract search and data bank search depend upon the individual case. The collection of Russian patent applications constitutes a valuable document which broadens the performance spectrum of the disclosure office, which encompasses all patent protection rights relating to the FRG, all European patents and short versions of all U.S. patents.

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SCIENTIFIC AND INDUSTRIAL POLICY

SIEMENS EXECUTIVE ON ELECTRONICS COMPETITION WITH JAPAN

Duesseldorf HANDELSBLATT in German 30 Nov 83 p 14

[Text] 29 Nov--Not even the competition from Japan should be overrated as much as has happened occasionally in recent times, declared Dr Karlheinz Kaske, Siemens chairman of the board, in speaking before the Munich Export Club. After all, things cannot not be all that bad with the international competitiveness of the German economy if German exports have almost tripled since the first oil crisis and if in this time it has been possible to achieve average export surpluses of DM 35 billion annually.

He said that in electrical engineering the share of the world market held by the Japanese is not higher than that of the German electrical industry--if one disregards entertainment electronics. In the fields of activity of Siemens AG--that is, in connection with capital goods in the electrical sector--the share held by the two countries in world exports is about the same, at 13 to 14 percent. Of the 205 nuclear power plants built outside of Japan and the Soviet Union up to now, not a single one comes from Japan. "We respect the Japanese and recognize their achievements, but we are not afraid of them as our competitors on the world market," stressed the Siemens head, who gained relevant experiences about Japan as an advisor to Fuji Electric in the 1960's.

But in view of the rapid and continually accelerating technological changes, Germany's competitive strength could be frittered away, he said. Therefore, in the future as well the ensuring and improvement of competitiveness must be accorded the highest priority among the problems of business, stressed Kaske. The share held by exports and imports of goods and services comes to 33 percent of the gross national product in the FRG, whereas in Japan this is only 16 percent and in the United States only 12 percent. In the electrical industry, 40 percent of the domestic requirements are met from imports, whereas in Japan this figure is just 4 percent. The FRG is an open economy, he said, and therefore fully exposed to international competition.

Above all costs and technology must be kept in good order. The only proper profits are those based on competitive prices. Technologically, the FRG must remain on the front line of technological developments. Since the

range of Siemens products covers over 80 percent of the entire spectrum of electrical capital goods, it cannot occupy a top position at all times in all sectors of electrical engineering and electronics. But it is important to have a command of all key technologies, he said. For the electrical industry this means above all to prevail in microelectronics, which at present already forms the basis for half of all Siemens products.

Within Siemens AG, an improvement in the efficiency and effectiveness of research and development remains an urgent business goal, he said. After all, the money for 95 percent of the research and development expenditures must be self-generated, with only 5 percent being financed through public assistance. U.S. electrical outfits defray far more than half of their research and development budgets by funds from outside sources, which come primarily from the U. S. government and which are given as R & D contracts.

In the future, the growth rates of earlier boom periods will not be reached in domestic and foreign business, stressed Kaske. But where it is the case that larger growth cannot be expected any longer, the competition concentrates fully on the battle for market shares. At the same time foreign business has become more risky, not only because of the dangerously high foreign indebtedness of some countries and the incalculability of the changes in the exchange rates, but also because of the tendency toward protectionism which is growing everywhere.

He said that in the 1960's Siemens competed internationally with 45 percent of its products, while by now the figure is over 80 percent. In the last analysis the growth of this outfit came primarily from foreign countries: Whereas its domestic business just doubled at current prices, it proved possible to more than triple its foreign business, not least as a consequence of an increased commitment in the U. S. market and with the oil-producing countries. The German export trade still has too small a presence in the Asian area. It is above all in the eastern Asian emerging countries, the ASEAN [Association of Southeast Asian Nations] states, where Kaske sees increasingly important trading partners with large growth potentials.

He said that a solution to the FRG's labor-market problems depends not least on whether in the future the wage determination can be framed more in keeping with the market conditions. That is, the wage and salary structure shows considerable distortions, stressed Kaske.

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SCIENTIFIC AND INDUSTRIAL POLICY

SIEMENS, NIXDORF SUGGESTIONS TO MAKE FRG COMPUTERS MORE COMPETITIVE

Munich COMPUTERWOCHE in German 16 Sep 83 pp 1. 2

[Text] Manufacturers association and government want to awaken industry from its deep sleep. Bonn (CW [COMPUTERWOCHE])--The promotion of the data processing industry, announced by Federal Chancellor Helmut Kohl in his government declaration, is obviously bearing its first fruits. On the occasion of a joint press conference by the Federal Ministry of Research and Technology and 17 enterprises and associations of the German data processing industry, banded together in a working group, a catalogue of proposals and measures has now been presented in Bonn which is supposed to make West German computer builders more attractive in stepped-up international competition.

As the working group's spokesman Klaus Luft--vice chairman of the executive board of Nixdorf Computer AG [Inc.]--emphasized in talking to representatives of the press in Bonn, the data processing industry does not want to assume the role of a subsidy recipient through its initiative. Instead, the important thing is to seize opportunities in the industrial sector through growth. This requires an overall industrial-policy strategy in order to create the long-term prerequisites for the development of markets at home and abroad for the German data processing industry in its entire broad spectrum so that it will be enabled to finance forward-looking development projects.

In this connection, Luft demanded a decisive overall concept in place of the hitherto specifically point-oriented individual measures and in this connection made reference to concentrated efforts being made by important industrial countries which consider forward-looking data processing and communications engineering to be a major point in their national economies. By way of example, Luft cited developments in Japan and the United States although the far-reaching measures taken in Great Britain and France also deserve attention. If the FRG does not want to lose its international standing and thus its competitiveness in this important sector, the Nixdorf manager observed, then both industry and the government must directly take proper steps.

The initiators of this working paper--including not only Nixdorf, Siemens, Triumph-Adler, AEG [General Electric Company] Telefunken, and Kienzle, but also software houses such as ADV [Data Processing Work Group]/Orga and Softlab--

have termed it as a compelling must that the German data processing industry work together more closely than has been the case so far without any restriction on competition. The working group suggested that:

Structural elements, components, and subsystems be in the future procured from or be made by production cooperation partners in order to cut costs;

Basic technologies be developed jointly above all in the software sector;

Medium-term and long-term research and development projects be carried out together with colleges and research installations.

In addition to these in-house initiatives by industry, the working group however also called for a basic improvement in the general conditions due to government measures. This includes the idea that public procurement policy must to a greater extent than has been the case so far be guided by criteria of technical innovation and that public investments be used in a specifically goal-oriented manner for the promotion of new techniques and their broad utilization. In the opinion of industry representatives, the German Federal Post Office here has a particularly important function because it supposedly exerts a positive influence on the demand above all for terminal units simultaneously with the modernization of its telecommunications infrastructure.

Federal Minister of Research and Technology Dr Heinz Riesenhuber proved to be quite impressed by industry's determination to take joint action and described it as a very noteworthy process that the data processing industry is for the first time expressing its ideas in dealing with the federal government as part of a common effort. Riesenhuber emphasized that suitable general conditions for promising and growth-oriented development in the data processing industry is viewed by the federal government as its most important and most effective development task. This in particular includes a considerably more innovation-oriented public procurement effort but also incentives for the better availability of risk capital for the implementation of innovations as well as broad basic and advanced education in data processing. The current concept, he indicated, would, in terms of topics, consider all sectors (microelectronics, technical communications, data processing, and industrial automation) in the light of their reciprocal relationships; it will tie all areas together with their corresponding contributions and will use all promotion instruments in a complementary fashion.

As one can see in the memorandum presented by the 17 representatives from the data processing industry, they view the overall goal of their program to be the development and expansion of the domestic data processing industry into a "corner pillar of industrial engineering in terms of capacity, self-concept, and public acceptance." Being a leading Western industrial nation, the FRG must also secure for itself one of the leading places in information policy. This means the following primarily:

The role of the domestic market as a point of departure and as a pilot market for the data processing industry must definitely be expanded through an increased readiness to go after innovations;

The data processing industry's capacity must be increased considerably so that it will be able to take up a strong position on this domestic market and on the international markets and so that it will be able to secure its earnings in long-range terms;

Data processing installations must be employed consistently to raise the capacity of the public administration and the rest of the government infrastructure;

Data processing must be integrated in society in a stable manner with a view to broad public subject comprehension, convincing protection against misuse, and comprehensive cultural integration.

Summarizing, Klaus Luft, spokesman of the working group, stated that the starting situation of the German data processing industry is not bad.

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SCIENTIFIC AND INDUSTRIAL POLICY

FRENCH R&D BUDGET FOR 1984 PRESENTED, COMMENTS BY FABIUS

Paris AFP SCIENCES in French 17 Nov 83 pp 1-7

[Comments by Laurent Fabius, minister of industry and research, to the National Assembly on 15 November 1983 regarding his ministry's budget for 1984]

[Text] Paris--Research is "the priority of priorities" in the 1984 budget for the Ministry of Industry and Research. Speaking to the National Assembly on 15 November, Laurent Fabius said that the budget increase for the Ministry of Industry and Research is greater than that for any other ministry and that this illustrates the government's intention to "prepare for the future."

The budget presented to the deputies by the minister totals 61 billion francs and is centered on three priorities--investment, research, and training--which Fabius said constitute "the foundations for modernizing" the country.

Research, which the minister called the "priority of priorities," is taking the lion's share at 37.56 billion francs. This represents a 15.5-percent increase in value and an 8.5-percent rise in volume compared to 1983.*

Fabius admitted, however, that the objectives for volume growth as established in the July 1982 law on research planning and orientation (which called for a 17.8-percent rise in volume) "will be very difficult to achieve." But he added that while "sacrifices have had to be made," the "main choices" laid down in the law "have been respected."

Speaking for the opposition, Robert Galley (RPR) denounced the place given in the budget to the La Villette Museum, an "operation that is becoming a scandal." The same argument was developed in more moderate terms by Jean-Pierre Sueur (PS, Loiret) and Robert Chapuis (PS, Ardeche), who

* See AFP SCIENCES No 371, 29 September 1983, pp 1-6.

are the reporters for the "advisory committees" on "cultural, family, and social affairs" and "production and trade" respectively. Sueur expressed the hope that "in the future, priority will be given to investments contributing directly to the development of research."

The museum is being allocated a total of 1.72 billion francs in program authorizations (up 13.1 percent) and 110 of the 710 new jobs provided for in the budget. Sueur emphasized that in addition, its ordinary expenditures are rising at an annual rate of 4.9 percent.

Those three deputies, along with Christian Charzat (PS, Paris), reporter for the Finance Committee, expressed concern over the sizable variations in the number of researchers added from 1 year to the next (up 4.3 percent in 1983 and up 1.2 percent in 1984).

Charzat concluded by expressing the hope that establishment of the industrial modernization fund, which will be distributed by ANVAR [National Agency for the Implementation of Research], will not turn that organization into "simply a financial dispensary."

Here are the minister's comments concerning research:

The mastery of high technology in the fields of data processing, telecommunications, microelectronics, space, biotechnology, energy, and materials will constitute a major stake in international competition over the next 20 years. The impact of those new technologies will profoundly alter modes of production and result in a new deal of the cards among the world's major countries.

Until now, all technological revolutions have started in Europe, but the Pacific area is now clearly ahead in several areas. What is at stake is a new hierarchy of the industrial powers.

France, working as often as possible in cooperation with its European partners, cannot be absent from that competition, and it must play to win. The mobilizing programs, the four technological development programs, and the major operations in applied or finalized research are the tools for achieving that ambition.

Let us beware, however, of one danger. An ambitious long-term policy can be pursued only on the basis of vigorous and free basic research covering all fields of knowledge: today's research is also tomorrow's industry.

The great merit of the orientation and planning law of 15 July 1982 is that it made research a national priority.

In 1981, national research effort had fallen to 1.8 percent of the GDP. The leap has been made, and we are already up to 2.15 percent of the GDP.

The draft budget for 1984 represents a stage of development that is indicative of the recovery.

With an increase of 15.5 percent in value and of 8.3 percent in volume, the civilian research and development budget is the priority of priorities: 37.5 billion francs will feed the major public programs and support research by firms and private institutions.

The objectives established by the orientation and planning law in terms of volume will certainly be very difficult to achieve. It is true that the expected 3.3-percent growth in the GDP, on which the law is based, is beyond reach.

Sacrifices have had to be made, but the main choices laid down in the orientation and planning law have been respected.

Without continuity, there can be no real science policy.

I have insisted that that continuity should exist at the level of overall balance and in the major institutional choices.

1. Continuity as regards overall balance.

Overall balance has been defined on the basis of three principles:

First, long-term plans must not be sacrificed to short-term goals:

The development of activities in basic research will be maintained: total funds for that purpose will rise from 7,366 million to 8,206 million francs, and the increase is particularly pronounced in the case of program authorizations, which will rise to 2,690 million francs (up 12.8 percent). Special attention will be paid to engineering sciences (up 14.8 percent in program authorizations), the major interdisciplinary facilities, chemistry, and the life sciences (up 17 percent in each of those sectors).

Second, research and the firms must not be cut off from each other.

The boom in industrial research will not happen without the firms. The important role of the state-owned enterprises is beyond dispute, but the PMI [small and medium-sized industries] as a whole constitute the privileged center for efforts at innovation. And it is in that field that the gap in terms of the objectives established in the orientation and planning law is most disturbing.

At its meeting last 3 August, the Council of Ministers formulated an emergency program aimed at restoring the balance of patents and ensuring a better valorization of inventions. The National Institute for Industrial Property will devote additional funds to new operations for drawing attention to this area and providing advice.

The research tax credit will be put into effect and will provide the firms with assistance totaling about 750 million francs.

Third, growth in the various instruments for public research--jobs, program subsidies, and incentive credits--must be kept in equilibrium.

We will create 710 new jobs (including 334 positions for researchers and 266 for engineers, technicians, and managers). Of those positions, 247 will be allocated to the CNRS [National Center for Scientific Research] and its national institutes, 83 to INSERM [National Institute of Health and Medical Research], 76 to INRA [National Institute of Agronomic Research], 50 to the CNES [National Space Studies Center], 33 to the CEA [Atomic Energy Commission], and 20 to ORSTOM [Bureau of Overseas Scientific and Technical Research].

Consistent with those new resources in personnel, credits to support the programs and operating funds for the laboratories will increase by 13.3 percent. One-third of that amount (907 million francs out of a total of 2,818 million) will go to basic research.

Lastly, the incentive measures will be stepped up by 16.6 percent to permit, in particular, rapid expansion of the major mobilizing programs (energy, the industrial fabric, and the electronic network).

2. Continuity as well as regards the institutional options, which are:

Scientific employment.

Research structures.

Administrative and financial procedures.

a) The new code on jobs in the field of research will go into effect on 1 January 1984.

The decree establishing legal provisions common to researchers, engineers, technicians, and managers in the field of research will soon be submitted to the Higher Council on Civil Service and the Council of State.

That draft reform is the result of thorough dialogue with the responsible scientific bodies and the representative union organizations.

The principle of tenure as established by the orientation and planning law of 15 July 1982 will be applied as of 1 January 1984. Personnel will then benefit from the best guarantees as far as careers and social coverage are concerned. The code will thus constitute a genuine instrument for science policy making it possible to implement effective mobility both within the field of public research and between the organizations concerned and industrial research.

Research professions will be upgraded. Careers will become more attractive, and working conditions in the field of research will be harmonized to a considerable extent.

Parallel with that, evaluation is becoming a basic principle in the management of personnel, whose qualifications and professional activities are examined periodically by experts.

Lastly, a procedure will soon be instituted in the organizations concerned so as to determine the adjustments that will be necessary because of their specific nature.

In all, and despite the current constraints, the reform of the code on research personnel will constitute a very important step forward in the development of French research.

b) Research structures will be made more efficient.

The new procedures for cooperation among organizations (GIP's, subsidiaries, and so on) will be encouraged.

In addition, two new research poles will be established before the end of the year:

The first, which will concern itself with oceanography, will be established by merging the CNEXO [National Center for Exploitation of the Oceans] and the ISTPM [Scientific and Technical Institute for Ocean Fishing] into IFREMER. The new establishment, which will operate under industrial and commercial rules, will be allocated credits totaling 650 million francs and will provide 1,020 jobs.

The second pole will be concerned with tropical agronomy. It will be established by combining the many organizations now in operation--and often in dispersed order--into a public industrial and commercial establishment called the Center for International Cooperation in Agronomic Research for Development (CIRAD).

With 1,021 employees and 388 million francs in credits, CIRAD should make possible a new approach to development problems in the tropical countries.

In both cases, the legitimate interests of the personnel will be respected.

c) Financial procedures will be simplified.

As part of the new financing system for the EPST's, notifications concerning operating credits for the laboratories will be issued from now on without a separation of the portions allocated to missions, current expenditures, maintenance, and minor equipment.

In exchange for increased responsibility, this allocation of one aggregate sum will enable the directors of laboratories to make their own decisions concerning the distribution of funds among their research teams.

This strong priority in favor of research does not, however, relieve us of the responsibility of making choices.

The fact is that the needs are enormous and, for reasons noted in all countries, the farther research progresses, the more it costs.

As far as equipment is concerned, the priorities have been established as follows:

First, basic research, which, as I said, is increasing by 12.8 percent (5.7 percent in volume).

Second, four mobilizing programs (electronics: +32 percent; biotechnology: +32 percent; employment and working conditions: +41 percent; and cooperation: +18 percent).

Third, two technology development programs (space: +35 percent; and nuclear power: +16.3 percent).

Fourth, two groups of finalized research (the food processing industry and transportation and housing).

Lastly, the new operating rules have placed the emphasis on training through research.

I would like to take this opportunity to pay tribute to all the personnel in research, regardless of their specific field and regardless of their rank, for the high quality of their work. I want them to know that the nation is grateful to them for their competence and their contribution to progress.

Training

Training is the third mobilizing theme in the budget for the Ministry of Industry and Research....

The inadequate effort to train people has hampered industrial transformation: less than 2 percent of those earning a CAP [certificate of vocational aptitude] and less than 4 percent of those earning a BTS [advanced technician's certificate] are qualified for a job in data processing and electronics, whereas 500,000 skilled jobs in the electronic network will open up between now and 1990.

The Ministry of Industry and Research is closely associated with the efforts being made in those fields by the Ministries of National Education and of Vocational Training.

As part of the first priority program for execution under the Ninth Plan, 150 million francs from the Fund for Vocational Training and Social Advancement will be devoted to new technologies, including 62 million francs for production technology and 34 million francs for engineering equipment goods. In the field of electronics, the training plan initiated in 1983 will continue. In addition, 134 million francs will be used by the Association for Adult Vocational Training to improve the quality of training for the new technologies, and 125 million francs will be allocated by the Fund for Vocational Training to the training of engineers.

Without waiting, I have asked that the emphasis be placed on the number of grants: 40 additional scholarships for doctorates in engineering will be established, and the annual number of research grants will be increased to 1,800 at the start of the 1984 school year.

On the subject of industry, the minister emphasized the need to encourage innovation and the emergence of new technologies:

The credits allocated to the electronic network are rising from 2,685 million to 3,470 million francs (+29 percent). To allow for the new areas of convergence between telecommunications, data processing, and office automation, the government's modes of intervention will be reorganized and standardized. From now on, all the industrial credits for the network (2.8 billion francs) will be part of the supplementary budget for the PTT [Postal and Telecommunications Administration], and a permanent committee for determining strategic options has been established under the chairmanship of the minister of industry and research.

Parallel with that, new instruments are being set up. A fund for the support of programming firms is being allocated 50 million francs by my ministry. That fund will grant loans, guarantees, and subsidies to promote the development of firms to produce programs for audiovisual communication; the designing of software and the implementation of new technologies for image processing and picture synthesis.

A credit of 400 million francs is provided to form the guarantee fund of the Industrial Modernization Fund (FIM), which was established on 28 July 1983. With an allocation of at least 8 billion francs for 1983-1984 and under the supervision of ANVAR, the FIM, using a very rapid procedure, grants participatory loans to firms as well as loans to leasing firms for projects showing promise for the future. Priority goes to high-tech facilities and equipment, the development of office automation and memory chips, the development of biotechnology, the refinement of highly energy-efficient vehicles, and the supplying of microcomputers to schools and training establishments.

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SCIENTIFIC AND INDUSTRIAL POLICY

THREE FRG BANKS TO FORM VENTURE CAPITAL FIRM IN BERLIN

Duesseldorf VDI NACHRICHTEN in German 23 Sep 83 p 25

[Excerpts] The promotion of technology-oriented enterprises assumed definitely greater significance in the FRG in 1983. In addition to the government, more and more private venture capital companies are establishing themselves on this market. The latest example is the founding of a risk capital company by three Berlin banks which is intended shortly.

The initiatives aimed at promoting the founding of technology-oriented enterprises have been stepped up clearly in the FRG during the current year. The most current example is the intended founding of a venture capital company by Deutsche Bank Berlin AG [Inc.], Berliner Industriebank AG, and Industriekreditbank AG-Deutsche Industriebank in Berlin. The company--which, according to information supplied by Deutsche Bank Berlin, is to have a capital endowment of DM10 million--is to participate in young innovative enterprises. The private-industry initiative, which materialized on the basis of a suggestion from the Berlin Senate, is considered very important for the effort to enhance the attractiveness of Berlin as an industrial location by the Berlin Chamber of Industry and Commerce.

Growing interest in financing young technology promotion enterprises is also pointed up by a series of events and congresses on the topic of venture capital.

In spite of these activities--according to the Fraunhofer ISI (Institute of Systems Engineering and Innovation Research) in Karlsruhe in a newsletter--the FRG, compared to other highly industrialized countries, currently still has a definite need to catch up in supply risk capital. The United States leads in this field. According to information supplied by the ISI, the United States in 1982 had about 600 risk capital companies with an investment volume of more than \$6 billion. Of that number, about 130 are independent private companies and about 100 are affiliates of big enterprises, banks, or insurance companies. About 34 percent of all of the investments made here went to the computer industry, 11 percent went for gene and communications engineering, while 13 percent were earmarked for miscellaneous uses in electronics.

Japan Pushes Venture Capital

In addition to the previously mentioned private initiatives, there are also government promotion measures for technology-oriented enterprise founding in the FRG. Here we might mention the guideline of the federal minister of research and technology which has been in effect since 28 July of this year. According to this guideline, for example, nonrepayable subsidies are granted for research and development work amounting to as much as DM900,000. Bank loans, used to finance such projects, can be backed to the extent of up to DM150,000, and aid up to DM54,000 can also be paid out for the preparation of concepts for innovation projects ready for evaluation. On the whole, the Federal Research Ministry is making DM7 million available for this purpose in 1983. Medium-range finance planning includes a figure of DM100 million for this promotion measure.

Additional promotion measures for young technology enterprises are being prepared especially by the Senate of the City of Berlin. The innovation fund, which was established already in 1982, according to the ISI, has the mission of making capital available for innovative high-technology projects. This year, DM5 million are available for this purpose; next year, the figure is to be increased to DM7 million. So far, 11 projects--including five technology-oriented enterprise foundings--have been supported in Berlin with a total of DM3.6 million.

WFG (German Risk Financing Company) in Frankfurt is active on the German risk capital market; it was founded by 29 domestic loan institutions in 1975. WFG presently participated as a minority partner in more than 30 enterprises with about DM33 million. About one-third of that is for the founding of new enterprises.

The IVCP (International Venture Capital Partners), which was founded in the private industry sector at the end of this year, with headquarters in Luxemburg, is trying likewise to get into this growth market with DM40 million. This is a market in which Kienbaum Internationale Promotion GmbH [company with limited liability] and the Rausch & Rosenbeck Company, at least for some enterprises, are operating successfully and which has thus clearly started moving during the current year.

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SCIENTIFIC AND INDUSTRIAL POLICY

EFFECTS OF NEW EEC FINANCIAL REPORTING LAW ON NETHERLANDS

Rijswijk PT ACTUEEL in Dutch 28 Sep 83 p 7

[Article by Tjeerd Dorlandt: "New Law In 1984 On Financial Reporting Promises Less Clarity and More Expense"]

[Text] Next year Dutch business will be faced with a radically changed regulation concerning annual financial reporting. Our country will then be in step with the EEC Fourth Guideline, designed to standardize financial reporting in the Common Market. Dutch business cannot be very happy with the EEC Fourth Guideline, whose compliance legislation was passed this July, asserted Dr J. Klaassen upon the appearance of his book "Denieuwe jaarverslaggeving, een gebruikershandleiding" (a user's guide to the new reporting format), a work written in collaboration with his accounting colleague, G. H. Zevenboom. Under the new system, business will be confronted with a striking increase in the number of regulations, resulting in additional costs without producing significant new data. Also, those not trained in accounting will have considerably more difficulty reading documents in the new format.

Assuring the uniformity of EEC legislation is a very good thing, but it does mean that the good must suffer along with the bad. The guideline passed in 1978 means that the countries already having detailed legislation on annual financial reporting--especially France and West Germany--will have relatively marginal adaptations to make in their law. They have been able to exert a clear influence on the content of the guideline. For some other countries--for instance, the Netherlands and Great Britain--the problem of adapting will be more radical.

Businesses in our country have until now enjoyed relatively great freedom in compiling and publishing financial documents. 1984 will put an end to this. Klaassen, however, thinks that this was not necessary in the final analysis. In his words: "Additional regulations should be defended on the basis of their usefulness in curbing abuses. But there is no evidence that these exist in the Netherlands in the matter of financial reporting. On the contrary, the financial reporting of large Dutch businesses is generally highly regarded, as witnessed by various studies abroad, and the quality of consequence." In other words, present liberal Dutch legislation on the subject is generally satisfactory.

The Layman Is Worse Off

Under the new regulation, outsiders will certainly not gain a better view of the financial status and operations of a business. Says Klaassen: "The new law will not furnish the concerned public any important information that was not available before. The new law provides that many details of assets, liabilities, costs and production must be furnished. This information is so detailed that it is hard to imagine anyone other than experts--e.g., accountants--being able to profit by it." The layman, though, such as the usual general director with a technical education, is worse off under the new system. To alleviate this problem and to give the experts a good orientation as well, Klaassen and Zevenboom have written their manual and had it published by FED.

As mentioned, the Fourth Guideline is the occasion of the Uniformity Law. The bill was submitted to the Second Chamber in September 1980 and passed in mid-July of this year. Presently, the bill is in the hands of the First Chamber, where it will probably be passed before the end of the year.

This means that the new regulation will go into effect for the majority of businesses as early as 1984. For banks, insurance companies and for businesses using a fractional accounting year, the law will go into effect 1 year later. After this introduction, the book analyzes the nature of the Uniformity Law. It includes sections on the rules for appreciation and how it is figured, the balance statement and its documentation, profit and loss statements and their documentation, special regulations regarding documentation, the annual report and so-called other data, publication policy, relationships between concerns and consolidation, jurisdiction and sanctions, accounting control, the report to be submitted to the works council and the problems to be expected during the transitional and introductory phase. It closes with the text of the new law, a glossary and examples of the required format for balance and profit and loss statements.

More Openness On Part Of Private Corporations

The authors distinguish 10 important changes in the new law from current regulation. The most striking change is undoubtedly the greatly expanded publication requirement. Beginning in 1984, all cooperatives, mutual insurance companies and even all private corporations--that is, all the BVs [private partnerships]--must place their financial documents on file at the Commerce Registry. This regulation impacts principally the BVs. Up to now, the small BVs have not had to submit any accounts whatever and the middle-size BVs have had to submit only marginal accounts. The small BVs--those having assets of less than 3 million gilders, sales less than 6 million, and a work force under 50--will now have to publish at least a documented balance statement. The remaining large BVs will have to release a complete financial report and executive report, whereas they have until now issued only the balance statement.

Powerful Incentive

For the time being, it seems doubtful that this new publication policy will really do much good. Failure to publish the required document is punishable by the Law of Economic Offenses, but non-feasance must first be demonstrated. The Commerce Registry is a depository without power to police. If such power were granted to it and it had sufficient personnel, the publishing requirement could be effectively supervised. The procedure is simple to carry out: records from 1983 can be compared with those of 1984, thus exposing those businesses not in compliance with the publication requirement. There is nevertheless a powerful incentive to comply, and the Commerce Registry does not have to do anything necessarily to make it work. Business itself can play the role of watchdog. The Uniformity Law grants the business community access to annual reports of all competitors. All any company interested in a competitor has to do is go to the Commerce Registry...

A second important change in comparison to the present system concerns the greater quantity of data required, the way they are arranged, and an extensive detailing of a number of categories.

New Categories

There still must be an annual financial report and an executive report, but the relatively wide variety of formats is no longer permitted. For the balance account, one of three official formats must be used. For the profit and loss statement, there are four formats to chose from. These documents must be presented in more detail than before by reason of additional categories such as depreciation of assets in write-offs and the division of assets into tangible, intangible and financial. Along with this, a multitude of new data must be generated that are partly located in the category of so-called "other data." This calls for information such as the accountant's declaration, the statutory profit formula, a list of those people owning priority stock, etc. Moreover, the documents must be more extensive for balance and profit and loss statements. The number of active employees must be registered--information that is already furnished in many cases--and a perhaps more extensive statement concerning remuneration and loans to directors and board members. The works councils will be able to profit only moderately from this swollen stream of data. True, the new system requires that they be provided with both the executive report and the financial report, but the small and middle-size corporation still only have to furnish the works council with an abbreviated financial report, which means a step backwards from the present arrangement for the works council.

Accounting Personnel Doubled

The expansion of the accounting requirement is the third significant change. Beginning no later than 1985 under the new system, only the small corporations--those with sales under 6 million, stock assets not over 3 million and no more than 50 employees--will still be free from the accounting

requirement. That means that the number of accountants will be double that needed for the present system. It is primarily in the BV sector that many more businesses will come under the accounting requirement. The minister of Justice shall decide whether to introduce the accounting requirement before the end of 1985.

In addition to these three obvious changes, there are several less striking ones. The category of participation is being enlarged. From 1984 on, ownership of 20 percent of the stock--rather than the present 25 percent--qualifies the holder for participation. Also, the new law requires that under certain conditions there be non dividend-bearing statutory reserves, that profits not be paid out as stock dividends, and explicitly allows an appraisal to be figured on present value and historic costs.

All things considered, the new law departs significantly from the old one. The increased openness resultant of the extended publication requirement will favor the public--who must then be able to make use of it. However, this positive aspect is overshadowed by the negative outcomes such as the required new and more detailed pieces of information that entail additional work--for the accountant--and thus extra expense. According to Klaassen, even the basic idea of the Guideline is not served. The rule indeed eases the international comparison of financial reports and enables multinationals to streamline their administration. But there is no assurance of genuine standardization or a single, uniform European law on financial reporting, because the countries each have too much freedom to interpret the guideline and select a number of alternatives. It is, then, legislation for the sake of the Common Market, and that is not the same as better legislation.

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SCIENTIFIC AND INDUSTRIAL POLICY

MARKET STRATEGY, HIGH-TECH PRODUCTS OF NETHERLANDS' PHILIPS

Amsterdam DE TIJD in Dutch 7, 14, 21, 28 Oct 83

[7 Oct 83 pp 26-32]

[Article by Ton Oostveen: "Did Philips Sleep or Did the World Wake up?";
passages enclosed in slantlines, printed in italics]

[Excerpts] The Philips Incandescent Lamp Factories in Eindhoven. True, they also manufacture incandescent lamps. In addition: audio and visual apparatus, computer systems, digital telephones, non-radiation diagnosis apparatus, stadium illumination, word processors, plastic and metal goods, glass, furniture, guitars, etcetera in quantity. And especially: chips, the key to the future.

Philips is dancing through the international press. What is going on then? Has the giant who, according to the unions, has become stuffy and fallen asleep, finally woken up? Or was the giant calmly waiting until the world grew towards it, and is he now seizing his opportunity? In this issue, and during the coming weeks, DE TIJD wants to provide greater insight into the Philips story. It includes exciting chapters. What does tomorrow's market look like? What role will Philips play in America? How will the corporation beat the Japanese threat? What does a gigantic internationalization mean for the Netherlands, where Philips originated after all? What plans are being drawn up by President Wisse Dekker?

Interviews with the major actors in Europe and America.
This week about tomorrow's market.

"Philips is going to take profit seriously": a surprised notice from FORTUNE reporter Andrew C. Brown in January of this year. A very important discovery by the American business newspaper, in what so far has been the most remarkable story about the "Dutch electronics giant." And exciting reports about the Eindhoven "incandescent lamp factories" have been buzzing for the last year and a half. Here is a selection from a mountain of newspaper clippings:

- Philips and the American telecommunications giant AT & T divide the world market for digital telephone systems between themselves;
- Philips and the Japanese Sony dictate a world standard system for compact discs;
- Through the purchase of the Canadian data processing company Micom, Philips becomes market leader in word processors;
- Through the California Signetics shares, Philips acquires a strong foot in the chips market;
- Through the take-over of Marantz, Philips penetrates Japanese market thought to be inaccessible;
- Philips takes over Westinghouse (United States) lights division, and has thus suddenly acquired 20 percent of the American light market, and is henceforth the world largest producer of lamps;
- Philips is, via the legal detour of the American associated company NAPC [North American Philips Corporation], one of the 50 most important suppliers to the Pentagon and the only, in fact, foreign company to contribute to the American defense system;
- Philips inaugurates new era in diagnosis techniques with the development of a /nuclear magnetic resonance [NMR] technology/;
- and, oh yes, Philips also earns nice amounts of money as a bus service operator in /North Carolina/, a furniture manufacturer in /Illinois/ and a musical instrument maker in /Indiana/.

Old-fashioned Club Relationships

The tone of Philips news has been quite different in the past. In the seventies, the company was experiencing a real decline with extremely shrinking profits and stagnating markets. One could read that Philips had definitely missed the /computer/ boat. Philips had been conceited by trying to impose its own /video/ system on the world, as a result of which Japan got a clear field to filch this market away from the Eindhoven company. Philips had wanted to conquer America with a /picture disc/; it put an imperfect product on an unripe market and lost capital. And both Philips and Europe had been completely taken out of the game in the American/Japanese combat for the /high technology/ market.

Aalco van der Veen, FNV [Netherlands Trade Union Federation] manager with Philips in his portfolio, commented: "Let us understand each other: in the seventies Philips was stuffy, bureaucratized, and also paralyzed by the obsolete patriarchal club relationships within the single, large Philips family. Today the company has become much tougher, much more professional and is being managed with much greater clarity. Philips is no longer a/ball of elastic/. It is astonishing, even somewhat scary, to see how such a large corporation in such a short period of time could change its character so completely."

Fresh Wind Necessary

Ger van Os, who customarily negotiates with Philips for the BLHP [expansion unknown] Union, said: "The time for soothing noises from the Philips leadership is past. Under Frits Philips, the last but one family president, there was talk of social feeling, but criticism was never allowed. At that time the unions had to push and pull. Now we have to run to keep up with the new

management. Our supervisory task is becoming very difficult. But yet: to-day's fresh wind was very necessary."

Professor Ad Teulings, in 1975 the author of a very critical and in some aspects very damning book on Philips, stated: "My tone would be different to-day, less reprobating. An enormous number of things are changing in that company and many of the changes are positive. You once again recognize the entrepreneurs. I am impressed by the formula of reorganization, acquisitions and a more business-like nature. In the past, Philips had developed an extraordinarily veiled image of itself, which was hard to break through. Now I see a realistic company, which is no longer ashamed of taking sometimes tough decisions. The other side of the coin is that the government and the unions have even less of a grip on Philips."

Tomorrow's Winner

Once again: what is going on with Philips? Was the giant asleep? The top leaders of the corporation, led by President Wisse Dekker, deny this in unison. Only Cees Bruyns, executive president of the North American Philips Corporation, keeps open the possibility that Philips may have drawn some extra energy from the challenge of the American market.

Aside from this, the unanimous story is: no, you know, Philips was not asleep, but times have changed. /Is that so?/

Adviser Piet Brouwers illustrates his conviction that the world was mistaken about Philips as follows: "If I am not interested in my wife because I suspect that she is asleep, I may be sleeping more than she is: who knows, she may be fully awake."

That is a very good one. In any case, the stock exchange seems to have woken up. Philips shares are doing better than is warranted at the moment by the corporation's annual figures. Since /December 1982/, the number of American owners of Philips transferable shares has increased from 3 to 23.5 percent. NAPC Vice President Al Ruttner shuckled: "As you know, the stock exchange never buys successes of today but of tomorrow."

Apparently, Philips promises to become a winner on /tomorrow's market/. Does it have that potential? And what does that market look like?

Chips Culture

Within the Board of Directors of Philips, Mr L. Heessels manages tomorrow's portfolio: /chips/. He has both technical and commercial training, but seems primarily an artist. Being keen on interior decorating, he did not want a desk in his work room: a household table is much more pleasant and just as practical. The paintings on the wall he put to canvas himself. But he particularly emerged as a poet when he started a discourse on the "culture of making things." As I understand it, to make chips is a new high point of industrial-technical culture. And Philips, he says, is good at this.

Heessels: "How did this giant actually become a giant? By being very capable in adjusting to new circumstances. Philips has never slept, and today Philips is /stronger than ever/. Why? We are living in an era of transition from a mechanical to an electronic world. That world is growing toward me, toward Philips. The world of the future is the world of the chips. Philips has taken an important place in the world of chips. Hence, Philips will also be important in the future. It is that simple."

In another room down the hall, his secretary can also enjoy Heessels' vision. His artistic rapture about chips has tempted him to numerous decibels.

Blacksmith's Secret

Heessels continued his lecture, asking the question himself: "And what is a chip? Actually, an enormous package of electronic parts on one square millimeter. It involves something like hundreds of thousands of parts on that single millimeter. It is a great art, the fruit of a completely new process technology, to make such a thing. This technology requires enormous investments. We now have a chips plant -- a factory, that is -- in America, which cost \$100 million in investments. And then you are going to manufacture: absolute dust free conditions are necessary; the plant must have absolute climate control; the personnel run around like space men and space women in dust free aluminum suits. That is what I mean: we are talking about a new culture, sir."

"We, Signetics that is, have set up a factory for /integrated circuits/ in Albuquerque. There we have to manipulate endlessly in order to produce decent chips. You get the process started: at first, your system doesn't work, you have to throw out more than 90 percent of your products. You adjust, you manipulate, you tinker -- and it takes you a year. And one day, yes, then it starts to work. Then you get to the point when /half/ of your products -- that is to say of what you have put in that machine -- are usable. Sometimes, with chips you are very good at, you achieve 60 percent. No more."

Philips is among the industries which are "up to date" in this chips culture. How far? "We are ranked fourth in the world," said Heessels. "And in the area of bipolar chips we are even number one."

I did not get to the question of what a bipolar chip is, because Heessels went at it again and disclosed the blacksmith's secret: "Now someone can make a chip; great. But what is he going to do with it? How do you apply that chip? What is your application? The chip maker has no knowledge of applications. For that you have to be, for example, a manufacturer of television sets. /Ha, haha, now we're getting somewhere/. Philips /is/ a television manufacturer. Philips has this application knowledge at home. We are on the eve of the one-chip-radio and the one-chip-television set. And who is very big in the area of radio and television? Precisely Philips."

Annoying Jargon

Thus, at Philips the knife cuts both ways. The company is both supplier and purchaser of chips. The corporation uses half of the chips produced under its own management for itself and sells the other half on the world market. "Because," Heessels cried with emotion, "we are traditionally the /leading supplier/ of components."

Once in a while, you read in the financial and industrial press that perhaps Philips manufactures too many products, that it turns its hand to too many things, that it fritters away its strength too much to be able to "make" it commercially. But a great many of those products are "revolving" around chips and thus one part of the company feeds the other. At Philips they use an annoying jargon for this, which laymen have a hard time getting used to: /interface, synergy/, that kind of terminology. But they represent what Heessels refers to as "the key to the future": one division of the company relates to another, one success causes another, the face of company A forms a perfect combination with the profile of company B. Those who have the electronic technology as well as the ~~art~~ to apply it in a usable manner, will dominate the future.

Hence, tomorrow's market is a chips market. Europe, says Heessels, represents a tremendous area of basic inventions in this area. That is also the case with the United States, where "high technology" has benefited from the "spin-off," the byproducts, of the space programs. And Japan, the world's third largest technological center, has not made any impressive contributions to the basic technology but is very strong in developing chips applications.

Market Too Small

The European problem, according to Heessels, has always been found in the limitations of the market on our continent. In simple words: we invented the most beautiful things but had no clients for them. Heessels: "This is why it was absolutely necessary for us to buy Signetics in California. It didn't do us much good to be by far the number one producer of chips in Europe, as long as the market stagnated. Hence our jump to the States."

Here is where one of the paradoxes occurs in the Philips phenomenon. I have heard from friend and foe alike that the company is /top leader/ in research activities. Seven percent of the turnover is spent on research and development. The /Physical Laboratory/ in Waalre is unequalled or virtually so. But Europe offers no market, or at least an inadequate one, or at least a market frittered away far too much by national borders for the splendid products devised by the scientists at Philips. Heessels: "The conclusion is obvious. The blow must be struck in America."

Passing Windows

Before saying goodbye to the very impulsive Mr Heessels, we needed to get to know his characterization of Europe: "Our strength lies in our intellect and our money, not in the price of our labor. That is no scandal: it is great that we have made it so far. But consequently, Philips should not do anything

in Europe in which we are weak: the labor factor. The European strength must come from our intellect. That is where our future lies: chips take away a large amount of work, but create new work: more difficult, more complicated, also better paid. As a center of knowledge, Europe is a heavyweight."

So much for the chips, whatever they may be. I hurried to another member of the Board of Directors of Philips, Mr G. Jeelof, whose portfolio includes one of Philips' most promising activities: professional applications. A hotshot on tomorrow's market.

Jeelof comes across like the prototype of a cool intellectual, totally different from the high-spirited Heessels. But he also has an exciting story to tell: the history of the /windows/ which are flashing by. With this he reacted to a recent publication in the American magazine NEWSWEEK, which implied that Europe has been eliminated in terms of computers and that the "high tech" battle can no longer be won. "The rapid technological development," said Jeelof, "is comparable to a rapidly moving train. The view changes constantly and sometimes you do miss a distant view, but that is not a disaster because it is immediately followed by another panorama."

The missed "window" was that of the large computer systems. Philips began developing these in the sixties; in the early seventies, Philips, the French International Data Processing Company and Siemens from the FRG, formed the /Unidata/ group to develop a European computer. But this European effort came too late: the American computer company IBM turned out to have become unbeatable already. Unidata became defunct. In terms of the /mainframe/, the large systems, Europe no longer entered into it. A "window" had been passed.

Jeelof: But what is happening now? On the data processing market it is not those large systems, but smaller systems tied to those larger ones, which are the most promising segment in terms of special applications. And we are very much involved in that.

Question: Where does Europe's and Philips' strength lie in terms of professional applications of electronics?

Jeelof: Our opportunity lies in the integrated systems. We know the systems for data processing and communication systems, such as /word processors/. We can couple those systems together: that offers enormous possibilities for companies.

As I understand it, this puts us in the area of small data equipment coupled to computers via telephone: /terminals/, which produce both figure files and text, which can be called up by dialing your telephone. On this market the urgency is gone. Philips is listed as the eleventh, but the differences in turnover between the first and the last on that list are not that great.

Giant and Dwarf

Jeelof: In acquiring a good market position it was very useful to us that in all European countries Philips had such a strong market organization. That is

the continuous paradox of our company: our network of independent national organizations is harder to handle than an undivided organization. But all those separate organizations do strengthen our ability to penetrate the separate markets.

The strength of Philips' market organization in many dozens of countries has played a significant role in what has been called one of the most important deals of recent years: the establishment by the American Telephone and Telegraph Company [AT&T] and Philips of a /joint venture/ for the development and marketing of digital public telephone systems: a market, the size of which in terms of money in the coming years is being estimated at \$115 billion.

In this combination, AT&T is actually the giant and Philips the dwarf. But Philips' penetration capabilities in markets outside the United States (which itself falls outside the joint venture) and the fame of the Eindhoven research potential have led, at least on paper, to a fifty-fifty agreement anyhow. Jeelof prefers not to make any estimates on the success of the deal, which we shall return to later: "We have formulated certain minimum goals. Come back a year from now and see if perhaps we have surpassed them."

Consumer Wins

The need for this joint venture was also determined by the gigantic research and development costs in modern technology, which can no longer be borne by individual companies, and by the resulting need for large scale production, and thus also large scale markets. This theme keeps coming back.

Jeelof: We are not short of brilliant ideas, but of markets to dispose of them. An obvious example is our Megadoc system for optical registration. Complete archives, libraries, encyclopedias can be stored on a single picture disc and reproduced on your screen. In today's society, the function of archives is of vital importance both to the government and to business and industry. Our system is the best in the world, but how can we penetrate the market? For that you need /key clients/ whom you can choose freely. But for the time being we are restrained by national authorities which prefer to choose in favor of local industries.

Question: Let us assume that this one market does not exist; does that mean that you can forget about your Megadoc success?

Jeelof: No, not in the long run. The consumer wins and he is the one who will ultimately choose our product. I am convinced of that. It is important for us to be ready for that moment.

Medical Equipment

Question: Do you have any other trump cards in the professional sector?

Jeelof: We have been very successful with our medical systems: Philips was very strong already in diagnosis systems and radiation therapy. We have now added our NMR machine, which makes it possible to produce a picture of the most uncommon sections of the human body without using any X-rays.

In Best, where the headquarters of "Medical Systems" is located, I have seen that /nuclear magnetic resonance/ machine, even though I was admitted to it only after taking off my watch and after a discussion of whether I would run the risk of having my partials wrenched from my mouth. Because the spectacular aspect of this discovery is the use of an enormous magnet which moves nuclear particles within the atoms in our body in such a way that they send out radio signals, which can be translated into a picture -- something to that effect.

Jeelof: We see a growing market for medical systems even though we don't know precisely yet what traditional diagnostic methods will be replaced by NMR. It is expected that, through the combination with data systems, it will have a cost reducing effect. But they do require large investments. Because of the pressures of the recession, the European authorities are not too well situated in this respect, even though we do have the impression that the worst is past. But in this industrial branch we also expect a great deal of the American market.

Defense, No Weapons

Question: Do you also consider your arms production as a trump card for the firm?

Jeelof: Philips does not manufacture arms. We only produce defense systems.

Question: Well, yes!

Jeelof: It is certainly an important growth market. In the world as a whole. It involves electronic guidance systems and also integrated systems. You understand that this market especially is strongly influenced by nationalism: every country has its own industry in this area and will not be too dependent on other countries. It is a very fragmented business. From our small country we have to try to penetrate other markets purely on the basis of quality. And it is working: for some of our systems we are world leaders. And yet, the growth percentage of this activity will always lag behind that of integrated circuits or data systems: the market is extremely susceptible.

Because in a business like Philips everything is related to everything else, somewhere halfway between the professional systems and consumer electronics we find the /lighting activities/. That is the activity Philips derives its name from as manufacturer of incandescent lamps. It is obvious in this context that we should not think of yesterday's pear shaped light bulbs alone but of many more activities: the energy saving /halogen lamps/, with which Philips is ahead of the competition and is aiming high are very promising.

But the lighting of public buildings, stadiums, roads and traffic intersections, and the sophisticated market for traffic guidance systems are found in this area between traditional light bulb activities and high electronics. Here, the already conquered market of yesterday, expanded with recent acquisitions, flows into tomorrow's market.

Protection

Question: Strong in America, growing in Japan. And what about Europe? Do we really have to have import limitations via the European Commission on Japanese videos?

Van der Klugt: The Japanese sincerely believe that with their system of doing business, they are fair competitors, but on their home market this system includes an absolutely joint effort by business and industry, the government and the banks. You cannot get a footing in there or only barely, and we find that unfair. Now, as far as our response in Europe is concerned: we do not see that EC measure as old-fashioned protectionism, but as /clear, temporary/ and /transparent/ protection of our so-called /infant industries/. This includes video plants, the production of compact discs, etcetera. As soon as these industries have outgrown their baby shoes, the market protection will have to be withdrawn. And we would find such behavior acceptable in Japan also.

Question: Did Philips, which came up with the picture disc a few years ago and then disappeared in the fog with it, specifically in America, miss another step?

Van der Klugt: The picture disc was only one of the applications of laser technology. You could come up with numerous other product concepts. We know from experience that during the first 5 years of their existence, such completely new products never achieve a market penetration higher than about 5 percent. It is only later that such a product will make a breakthrough and that you will have a chance for spectacular increases.

Partly because of the turbulent development of video tape recording, we know that the picture disc is a slow starter. But I see the breakthrough ahead. I anticipate consumer applications of product concepts soon.

You can achieve totally new effects with it in all kinds of game machines. They can be used for training purposes because of the amount of information they can hold, and because you can "play" with them. I see them as useful additions to computer systems. They can also be applied in cars, for example, to store road and traffic information.

Market Saturation

However, I did read in the trade press that top leaders, such as those at Philips, are biting their pillows at night out of impatience until the completely new products such as the picture disc break through. And they are supposedly also jumpy about a gigantic success with /compact discs/ (also read by laser beams). For this reason, the agreement between giants such as Philips and Sony concerning the joint development of a single laser system is so important: this way a uniform standard is being imposed on the world for compact disc systems. And this is essential to permit uniform /software/ production -- hence, prerecorded discs which can be used on all machines--to get off the ground. In simple words: who would buy a laser system if he cannot buy corresponding discs?

The biting of the pillows because things are not moving quickly enough is apparently explained by the fact that the market for traditional products is becoming saturated.

Van der Klugt: It is not only a question of some saturation, but the market is also shrinking in Europe. This is also related to other interests of the European consumers: their vacation and their private transportation are higher on their priority list than our products. But that does not necessarily mean that the traditional products are lost for us. Of course, the advent of the compact disc places the phenomenon of saturation in a totally different light, but in addition we are always in the process of /upgrading/ our market through renewal, improvement, refining of our existing package of products. Just think of the fact alone that /every year/ the complete /range/ of our audio-products /is completely replaced/.

Question: You mean that you are making sure that my brand-new audio system will be outdated in 12 months?

Van der Klugt: No, that is not the goal. Philips does not practice built-in /obsolescence/. Once the products have been delivered, they remain good for much longer than a year. But that does not alter the fact that, in order to remain in the market, you have to permanently renew.

Question: But if that compact disc succeeds, then we will all be able to throw away our records, won't we?

Van der Klugt: That is true. They would become obsolete. This is why the launching of the compact disc was such a challenge for us. It had to be done very carefully, following world standards. Because, for the first time in 70 years now, traditional records would become unusable.

Were we looking for that? I can only answer that technological progress cannot be stopped and that, if we had not done it, someone else would certainly have jumped onto that market. Innovation occurs when a market is ripe for it. Well, since then reactions to the launching of the compact disc have been very positive in the full width of the market.

Only Goal: Survival

/Tomorrow's market/: Philips is in the process of focussing on this from an industrial, commercial and organizational standpoint. This is why so much is going on in that corporation: they are determined to survive. To this effect, they are sometimes adjusting, streamlining and expanding at a breathtaking rate. But what are the social consequences, what are the political consequences, what are the advantages and disadvantages in terms of jobs? And especially also: how Dutch was "the Dutch giant," how Dutch is it and how Dutch does it remain?

[14 Oct 83 pp 26-31]

[Article by Ton Oostveen: "Philips in America -- Shuffling Cards and Looking at the Trump Cards"; passages enclosed in slantlines, printed in italics]

[Text] For the new style Philips, the United States represents the big casino: that is where it is going to happen. The North American Philips Corporation is determined not only to survive, but at the same time to grab a good share of the promising new markets in electronic products.

A visit to the New York headquarters, where the remarkable American associated corporation of the Eindhoven parent company appears to have an active interest in lipsticks, drum sets, bus enterprises, toothbrushes and new antiques. As long as the Japanese in the States do not sit at the family table. The expectations are very high.

Manhattan, 42nd Street, 23rd floor of a modal skyscraper. Headquarters of the North American Philips Corporation [NAPC]. With a broad gesture, Cees Bruynes, the big boss, pointed to the surrounding office colossusses in this business heart of New York City: "Here is where it is at. Here you find all the big boys in business and industry. That is why we are also here."

It is that simple. As simple as Bruynes' instruction to Vice President Rutten: "Hey, Al, why don't you order a helicopter. That would be nice. Then Mister Oostveen could circle around the headquarters of our competitors himself."

It did not happen. An hour and a half later I had to fly back to the Netherlands. But the proverbial "unlimited possibilities" are apparently still daily practice in the States. As well as the accompanying understatements: "It is very nice to work here," said Bruynes.

Magnetic Action

Very nice. And very promising. "The main principle of multinationals," FNV Director Aalco van der Veen told me in Utrecht, "is that they seek profits."

"And that," according to the organization sociologist Professor Ad Teulings, "means that streams of capital flow back and forth, specifically when it concerns multinationals in small countries. Sometimes they will flow toward countries where cheap labor makes lucrative production possible, at other times toward areas where large outlet markets are available." The conclusion seems simple: an immense market such as that of the United States of America fascinates Philips and has a tremendous magnetic attraction for the corporation.

Philips' latest annual report shows that the number of personnel in the Netherlands is shrinking as quickly to 70,000 as that of the United States is swelling to 50,000. The corporation's turnover in the Netherlands amounted to 2.9 billion guilders (7 percent) in 1982, in the United States (and Canada) to 9.8 billion guilders (23 percent). And even though the Netherlands still

provides the largest amount of Philips deliveries by far -- 23.4 percent in 1982 -- those in the United States (and Canada) grew to 17.4 percent during the same year. "When will these data cross each other and will North America take the lead in the Philips phenomenon?" BLHP Manager Ger van Os wondered worriedly.

Dutch Uncle

When I asked Cees Bruynes this question, he answered in English for the first time during our conversation. He happily cried out: "That would be a nice problem to have." It would be nice to have that to worry about. Nevertheless, he wanted to get away from the possibility of competitive interests within the corporation. As far as that goes, he fits in perfectly with the /esprit de corps/ which I have found everywhere among Philips employees and which is oriented only toward /the good of the company/. And, according to Bruynes, the NAPC is an indissoluble part of that company: "There is only one corporation, and within it the Netherlands remains our 'rich Dutch uncle.'"

And yet, we had to ask about this linkage, given that the NAPC occupies a very separate place in the Philips world. Whereas all the national Philips organizations can be correctly described as /subsidiaries/ of the Eindhoven parent firm, the NAPC should rather be called an /associated company/.

It was established in 1939, when the Second World War threatened to break out and Philips wanted to secure its interests outside Europe. Specifically, if the Netherlands were to be occupied by Germany and Philips here and in the remainder of Europe were to have to operate under the regime of the Germans, then the establishments elsewhere in the world would run the likely risk of being confiscated as "enemy property."

Hence, it was of the greatest importance to Philips to cut the legal ties between "occupied Europe" and the "free world," as far as Philips establishments were concerned. Furthermore, at that time the main office of the corporation was transferred to Curacao for the duration of the war.

The arrangement has been the subject of a great deal of discussion. On the one hand, Philips continued to operate under the Nazi umbrella to fall into what Professor Teulings refers to as "one of the most questionable forms of collaboration by Dutch enterprises in World War II"; on the other hand, the company in America and England contributed substantially to allied war production.

In all kinds of writings, critics of Philips have tried to depict the corporation as a disguised Nazi company with as little success as Frits Philips himself had in his memoirs where he rather naively tried to depict Philips as a kind of resistance organization. The final story still remains to be written. And it might well deserve the title "The Good of the Company."

United States Philips Trust

In 1939, because of this corporate interest, Philips transferred its American interests to the /United States Philips Trust/, which according to American

law has to be managed by Americans. It is true that one finds Dutchmen who have become naturalized Americans among them, such as the trust President Pieter Vink and Cees Bruynes. The trust owns 59 percent of the NAPC shares; the remainder are in the hands of American investors, who find Philips an increasingly nice "piece."

The arrangement implies that shareholders of the Philips corporation in Eindhoven have no real say in the NAPC or in other trust activities. However, they are "beneficiaries" of that trust, and as such recipients of possible profits to be distributed.

However, the trust proves its independence by rarely or never turning over profits to Eindhoven. Profits are used to expand the interests in the United States. And thus the American associated company continues to grow. European observers of the corporation sometimes worry about this and see the NAPC as the real growing away of Philips.

Bruynes refers the idea of willfulness on the part of the trust and/or of the NAPC to the realm of fables. What is involved here is /corporate policy/.

Satisfied, Bruynes commented: "The legal structure has given us, Philips that is, the opportunity to get on the map in America. Thanks to that arrangement, Philips is actually the only European enterprise which has made it here.

All of Us

[Question] Philips President Wisse Dekker wants to achieve a cleaner /top-down approach/. What does that mean in terms of the NAPC?

[Answer] Let Dekker explain that himself. I would say: the electronic world no longer has any important local or regional sectors. What is involved here is worldwide system struggles among a handful of competitors. In order to participate in these, you need world positions. In that struggle, the NAPC plays a role in complete cooperation with the corporate leadership. The corporation, that is all of us.

[Question] The chips eminently represent such a world position. But when the California chips company Signetics came up for sale in 1975, you did not rise to the bait. The trust did that. How does that work?

[Answer] It is a question of policy. The previous year, the NAPC had purchased the promising but loss producing Magnavox. Signetics also showed a loss. Well, the NAPC is a public company, listed on the stock exchange. The figures have to remain somewhat nice. Hence, to add another loss producer would have been somewhat too much for the NAPC. We could not absorb that at that time.

[Question] Last February, on the other hand, you did purchase the lamp division of Westinghouse with corporate funds. I find it all very complicated, you know.

[Answer] That was a good buy for a reasonable price. Besides, you think too much in terms of lines of division. Through my function in the trust, I am also, for example, chairman of the board (just say: president-commissioner) of Signetics. They are all aspects of a single corporate policy.

That answer seems relevant to me, because it does indeed characterize the turbulent growth of the American Philips activities as corporate policy. An important part of the corporate growth must be achieved in America. A simple figure can clarify this further. The American share of the Philips corporate turnover is approximately one-fifth. But for the kinds of products Philips sells, the United States represents /half/ of the world market. Hence, there is still room for growth there.

The American business newspaper FORTUNE recently formulated the importance of the United States convincingly for Philips as follows: "The United States will become increasingly the big casino for a regionalized Philips."

It is that casino we are talking about.

Bruynes: "Let me try to give you some insight into our philosophy. How do you build up such a Philips company in the States? After the war we were only small here. So you try, through your own activities, to build up a certain base, to develop a potential for profit. This stage was more or less completed in the sixties."

"Next, in the seventies, there were the take-overs of a number of other enterprises which could broaden our position: /Magnavox/ gave us the important power of consumer electronics. The take-over of the television and parts division of /General Telephone and Electronics/ [GTE] provided us, through the Sylvania and Philco trademarks, with an excellent position on those respective markets."

"Actually, the only thing missing in the picture was the light, specifically the hallmark of Philips. That has also been solved now with the /Westinghouse/ deal. From the United States it is now possible for us to develop Philips as /center of gravity/ on the 110 volt market, whereas Eindhoven is much more involved in the 220 volt market. Thus everything fits nicely together."

Bruynes talks about his business with as much simplicity as my baker who discusses with mother, his wife, whether or not he should include croissants in his assortment. Yet, the story is more complicated. Thus, in the seventies the NAPC decided to purchase video recorders from Matsushita in Japan, specifically the /VHS-system/ which is in competition with the Eindhoven V-2000, to stick a Philips sticker on it -- well, yes, Magnavox, Philco and the like -- and to take them onto the American market.

Bruynes: "That was a very difficult, but at the same time also a very simple decision. I discussed it at length with Eindhoven. But Magnavox needed recorders to jump into that market, and Philips-Europe could only supply its own, European system which is unusable in the United States. The accompanying software -- that is to say videotapes -- was not available here. What do you

do then? Do you stay in that business or do you let the whole video phenomenon go? We simply could not afford to remain outside of that trade."

Profitmaking

One image becomes clear: in spite of all the intertwining with the corporation, the NAPC is a typically American enterprise. And such an enterprise looks quite a bit different from a European one. It has two characteristics which apparently at the moment appeal to the imagination of the Philips corporation leaders, Dekker in the lead. Bruynes explained these characteristics to me. They can be summarized by the words /profitability/ and /redeployment of assets/.

Bruynes: "In America a company is judged by its profitability, its ability to produce profits. I believe that here in the States we may well be somewhat more profit oriented than is the case in Europe. We look for new plans or alter existing activities in order to raise our profits. That entrepreneurial goal is often neglected in Europe. I add immediately that today, Europe is changing very much. People there are beginning to realize now that this is the only way to conduct business."

In this context, we could quote the happy statement made by NAPC Vice President Al Ruttner in an exquisite /French/ restaurant in Manhattan: "Wisse Dekker has promised us a doubling of the corporate profits. Great. There is only one task left now: Philips has to make it come true."

The second characteristic, redeployment of assets, is at the service of the potential for profits. You shuffle your cards, you look at your trump cards and you get rid of those values which are useless in the game.

Bruynes: "Portfolio analysis and redeployment of your assets, your property, is very common here. Our intention in this respect is to improve our overall company profits within the states, and to strengthen the position of Philips internationally."

"Such a redeployment includes attracting moneymakers and rejecting activities which limit our profitability. Our criterion in acquiring businesses is always that they must be /leaders/ in their own area and that they must provide us with the necessary money: via profits and via access to local sources of financing."

Go Foreign

[Question] When you look at NAPC's portfolio, you think: that is barely Philips anymore.

[Answer] Then you look wrong. There really is a line in it. We have ever greater interests in the typical Philips areas.

[Question] Is there a limit to all this purchasing of companies?

[Answer] Of course. It is limited by what we are able to finance and by the usefulness of the acquisitions to the strength of the corporation.

[Question] What is the usefulness of furniture factories and bus companies?

[Answer] The fact that they bring in money which allows us to be able to afford the extremely costly investments in the electronic field.

Elsewhere in the world, Philips sometimes also wants to go foreign, but the many-sidedness of the enterprise in the United States is very striking. I was confronted by this immediately after entering the NAPC headquarters.

From upper level to lower level, all the employees are seated at "stylish desks," which I with my untrained eye would call /new antique/. They are sound, heavy, somewhat impressive. I do not think that they are good looking, but that is a question of taste. Bruynes is very proud of them: /Bake Furniture/ was part of the Magnavox deal. At the time, we could have relinquished it and limited ourselves to purchasing the electronics leg. But this would have cost us little less, whereas now we own a first rate market leader in the furniture branch.

Music, Lipsticks, Busses

Hence, an /earner/, not an /eater/, a profit maker, not a cost item.

There was more involved in that deal. Via Magnavox, the NAPC also became owner of the Selmer Company, and that is a very big boy in the area of musical instruments: snare and wind instruments from this Philips subsidiary are bringing in a great deal of money.

In turn, in 1981 Selmer had bought /Ludwig Industries/ of Chicago, which is a leading manufacturer of drums and other percussion instruments. In other words: Philips in America can equip whose orchestras with instruments which enter and leave the shops under the trade names Selmer, Bach, Bundy, Glaesel, Ludwig and Musser.

Thus, Bruynes talks in Manhattan about businesses which the people in Eindhoven hardly know anything about: /Anchor Brush/ is a manufacturer of all kinds of brushes, but also a specialist in plastic and metal technology and the producer of packaging materials. The latest NAPC annual report teaches us that this company raised a lot of eyebrows with its /toothbrush innovation/ and /lipsticks/ in costly new shades.

On the window sill of Bruynes' office is a model of a beautiful motor coach: "Nice company, you know," he said referring to the /Carolina Coach Company/, the third largest bus enterprise in the United States. In fact, Philips maintains regular bus connections over at least 3,800 miles in the states of North Carolina, Virginia, Maryland, Delaware, Pennsylvania, New Jersey and the District of Columbia, of which Washington is the capital. In addition, the company handles bus tours throughout the United States and Canada.

Upward Trend

These are all seemingly unrelated results of the policy of "profitability" and "redeployment of assets." As a matter of fact, this same policy also led to the rejection of Philips' activities in the chemical industry and in the manufacturing of veterinary medicines.

All these redeployments within the NAPC portfolio have led for the time being to the fact that an upward trend can be discerned in the NAPC results. And that was quite something in the seventies -- during a period of stagnating economy, declining turnovers and low profits. Now the revival of the economy also promises a profitable future to the NAPC.

Bruynes: "Just yesterday -- isn't it true, Al? -- the NAPC shares rose to unknown heights on Wall Street." He immediately added: "Just a joke, you know! We really don't live from hand to mouth here."

Many of the activities described so far could have been characterized as /capital movements/. Multinationals whose home base is only a small country are very strong in this, argued Professor Teulings in a recent study. Philips feeds the NAPC as it were, because the American associate is a corporation trump card.

Here the image arises of large entrepreneurs who behave more like /bankers/ than like industrialists. Philips President Wisse Dekker will dispute this image in a following article. But doesn't the image fit perfectly in relation to the NAPC? Are we not dealing here rather with a kind of commercial firm, which buys and sells interests in other enterprises, which resells Philips products and is more of a /moneymaker/ than an industrial enterprise?

What Is Commerce?

[Question] What is the relationship within the NAPC between the commercial and the industrial activity?

[Answer] Well now, what is commerce? Of course, we import from Philips in Europe and from other Philips installations in the world. We also import from other sources, outside of Philips: the main example in this category is those video tape recorders from Matsushita.

In our total turnover, approximately 15 percent of imports originate from Philips elsewhere. But I don't call that commerce. If you belong to the corporation, in whatever part of the world this may be, there is always an exchange of products with other parts of the corporation. But purchasing of products on the other side of the street, putting our name on them and reselling them with a few cents profit, is only a very small part of our activity.

[Question] In Europe, the unions are naturally very interested in the effects of your depth investments for other Philips establishments. To what extent is there still any NAPC dependence on Philips as a whole?

[Answer] Dependence? You can only answer this by looking at specific product groups. We have a very strong market position here with our electric shavers: nearly 60 percent. Virtually all of them come from the Netherlands. Our dictating machines -- not such a strong market position -- come primarily from Austria.

The major share of our turnover in medical systems, the old things, X-ray diagnostics, all of those come from Europe: the Netherlands, the FRG, a little from France. The black and white television sets we get from Taiwan. Only the color television sets are completely made here for the very simple reason that we have a different color system here. I cannot get sets for this market anywhere else.

Matter of Price

[Question] But what is your policy aimed at: to independently produce as large a package of products as possible or to benefit from other Philips establishments?

[Answer] Look, the primary consideration in this kind of thing is always what the best source is. I have to build up a market position, a profitable business. For that reason I have to watch the price. This led in the seventies to a shift of labor intensive products to low wage countries. But now we are experiencing this wave of automation, of digitalization, of completely different production systems. And now I see quite a number of those productions return to America. That is simply a matter of price.

Bruynes confirmed the image of the profit seeking multinational, which is somewhat oppressive to the European unions leaders. "You can tell those union leaders that I would love to be able to buy more products at Philips in the Netherlands or in Europe to sell them here /profitably/. I wish that were possible. Then we would first of all make Philips as a whole stronger and our business would become more profitable, and then I would not be faced with the necessity -- sometimes -- to make investments here."

"Of course it is crazy to duplicate the production apparatus here if there are Philips factories in Europe which are half empty. But sometimes you have no choice."

[Question] Is Europe too expensive?

[Answer] Well, /we have to survive/. I am pleased though to see that the situation in the Netherlands, in Europe is changing, also on the side of the unions. If they start producing cheaply there, then we in turn will be able to import more.

[Question] Are there other considerations which play a role in your choices of whether to produce or to import?

[Answer] The currency situation is of course important. Those movements of the dollar in recent years have influenced the way we do business. Not so long ago the dollar was quoted at 2 guilders; now it is already 3 guilders. What is it going to do next?

[Question] A more expensive dollar makes your imports cheaper: then you can get more for it in Europe. So what is keeping you?

[Answer] Well now, it is not that simple either. Once you have set up certain production lines, you cannot simply switch from one day to the next. Furthermore, we have built up a certain export capacity here. You cannot simply let go of that either.

From Mecca

[Question] What do you export primarily?

[Answer] Components, electronic parts; and medical systems, especially ultrasound diagnosis equipment; quite a number of military products, even though that is actually separate from Philips (in order to be able to participate in the American arms production, this Philips branch has been placed in a separate trust, which is supervised by the American authorities -- Ton Oostveen). In addition, musical instruments and gradually also more in the area of lighting and in consumer electronics.

That is very logical, you know: because those products are it, right. As a matter of fact, it is also in the interest of Philips in other parts of the world that things be supplied from this Mecca of electronics, where the competitors also get their products.

[Question] In Eindhoven, Wisse Dekker has launched the regional strategy. The United States is such a region. What precisely does that mean?

[Answer] It means that the /high tech/, the advanced electronic technology such as that encountered in chips and integrated circuits, is becoming our world task. Those articles are born here, this is where the largest markets are, hence the growth of Philips in this important area of activity will be strongest here.

I see the production of lighting and consumer articles more as a regional happening; in these areas we started too late in the States to be able to obtain equally large market shares here as we have in Europe for example. And so every region has its task.

[Question] So, the most promising task -- high tech -- falls to you. Growth is inexhaustible. When will you pass Philips-Netherlands or even Philips-Europe?

At this point in the conversation came Bruynes' already quoted pleased statement that such an occurrence "would be a nice problem to have to deal with." He added, seriously: "Our efforts here and those of Dekker over there to re-unify Europe industrially are aspects of the single, decisive struggle against the common enemy: /the Japanese/."

He cheerfully added: "The Japanese are not going to make it here: American industry is very much on the alert. By all means do not write it off. This is the country of the new entrepreneurs: you see much less of that in Europe.

And the size of the market here is 5 to 10 times larger than in Europe: we want to maintain Philips in that market."

Bruynes also outlined -- as Philips leaders in Eindhoven also did last week -- how new electronic and laser techniques lead to new product concepts, ideas for things for which they will have to wait and see whether they are marketable. "But that does not alter the fact," said Bruynes, "that you have to participate, that you cannot let your chance go by. That is what makes this work so exciting."

7 Billion Market

He mentioned the /7 billion market/ in videogames and home computers, where the heads of daring producers are now rolling: "Everyone is into this: from IBM up to and including the toy manufacturers. And nobody knows who the client is, what he wants, what way the business will go. A field which is fluctuating enormously."

/The big, American Casino.../ The NAPC consults assiduously with Eindhoven; Bruynes flies 10, 12 times per year to the Netherlands; Wisse Dekker gives the Dutch unions gray hair because of his trips to the States.

There is a constant exchange of ideas: in Waalre, the Physical Laboratory of Philips is developing new technologies; in Briarcliff Manor, New York, the NAPC has doubled its own research activities.

Bruynes: "We are not going to re-invent the wheel here; we adjust our research to the world search for usable and marketable products. And we do that in a climate of /murderous competition/. This keeps us moving. Go see for yourself in Wall Street. Note the feverish dynamism. It is our task to transfer that dynamism to the Philips corporation as a whole."

A world battle for a world market. The NAPC is in the front lines. Companies have been or are taken over, new productions are started, new possibilities thought up. The investors, the business press and the competitors notice the movements at Philips/America. Philips' expectations are very high.

Bruynes: "We have to make those expectations come true. That requires an enormous effort."

And Vice President Al Ruttner, who wanted to really spoil me after the interview with a visit to New York's best /Chinese/ restaurant -- "for heaven's sake, don't write that my job only consists of eating" -- summarized the American Philips phenomenon over shrimp: "We are simply in the process of surviving."

[21 Oct 83 pp 18-23]

[Article by Ton Oostveen: "The Two Faces of Philips in the Netherlands";
passages enclosed in slantlines, printed in italics]

[Excerpts] Philips is important for the Netherlands, but is the Netherlands also important for Philips? Or are the ties with the home country becoming looser? The corporation has been measured for a */global outfit/*: henceforth, the Netherlands Philips Companies are subsidiaries. A recent, large structural change makes one wonder about the place set aside in the future for our country within the Philips phenomenon. The Philips leaders themselves believe that the Netherlands could be better for it, but critical observers of the corporation are raising their eyebrows. In at least one aspect, their prognosis *is* the same: whatever Philips Netherlands may have to offer, it is certainly not growing opportunities for work. Part three of the Philips series: the contours of a post-industrial society.

Wandering from one to another of a large number of Philips leaders, I carried two cassette recorders with me. Made by Philips, which greatly charms those gentlemen. But why two? Because I never fully trust those things. And because they do not produce a */beep/* or a */flickering light/* when the tape is full. I set them up in such a way that when one of them stops, the other keeps going for another quarter of an hour. That is bothersome, you know, that technique.

Frans Otten, highest Philips boss in the Netherlands, also the last manager to be related to the */Philips family/*, made a request to adviser Jan van Schagen: "Pass this complaint on, Jan, such tips are useful! You live on tips from your clients."

Large Role

Philips cannot do without clients. In a recent folder on the significance of the company for our country, I read the following exhortation: "To buy from Philips means to support the continuity and the development of a high-grade technical potential which is important for the Netherlands. It also means to promote jobs, directly or indirectly, in the Netherlands, irrespective of whether the products are manufactured here or elsewhere, along with the contributions of the various managerial centers, the research activities, the marketing organization and the technical service groups in the Netherlands."

In short: */Do not purchase abroad what your own country has to offer/*.

[Question] Mister Otten, isn't the role to be played by the Netherlands Philips Companies *[NPB]* in the corporation declining?

[Answer] You should actually always look at the NPB role with regard to the corporation and at its role with regard to our country. Both roles are very substantial. Let me give you a few basic figures: in the Netherlands we

achieve 7 percent of the corporation's turnover, 24 percent of the total corporate production and through the bank annually a quarter of the corporation's new investments; 22 percent of all Philips personnel work here; we have 24 percent of all the capital and we handle 23.6 percent of all deliveries of the corporation, and as far as the research activities are concerned half of them take place at home.

And what does all of that mean for the Netherlands? We offer here approximately 8 percent of the jobs in industry, we have approximately 8 percent of the industrial exports, 3.7 percent of the imports, and we are responsible for 41.5 percent of the Dutch balance of exports (exports minus imports -- Ton Oostveen).

Of very great importance is our activity in the area of /research and development/. Our company contributes 35 to 50 percent of the work done in this area by Dutch industry: it depends on the definitions you use for it.

Constant Investments

[Question] These are impressive figures, there is no doubt about that. But are they growing or shrinking?

[Answer] Well, for the time being investments are constant here. And our main role, research and development, /definitely/ remains in existence. The combination of activities is too important for that. Because important activities are taking place here in the areas of glass, picture tubes and television, and because those three branches are ancillary suppliers of each other, you really do think twice before letting the knowledge built up in this regard fritter away. And that applies to most of the activities of our Physical Laboratory and of the development laboratories of the major industrial groups.

[Question] But new research groups are also being set up elsewhere, in America for example, aren't they?

[Answer] Yes, but building up elsewhere does not mean decline here. I do not anticipate this at all.

[Question] What are the trump cards within the NPB phenomenon, and what are the less strong areas when we look at the future?

[Answer] Well, I would rather not comment on that. Because the competition would like to know that too. So I'm not going to talk about this to third parties.

[Question] I don't mean anything that dangerous. I only want to know whether the knowledge sector here will become more significant and the production sector less so. What will in the end still be manufactured here?

[Answer] In any case, untold greater amounts than what we sell here. Look especially at our very positive balance of exports. That counts. This comes about all over the world in other kinds of production processes. /Robotization, flexible mechanization/ etcetera, that is irrevocably the future.

As a matter of fact, you can regularly find data in the financial press, which indicate that our average turnover per worker is rather low. Hence, we are still fairly labor intensive. A structural decline of employment, independent of the development of economic growth, is unavoidable for purely technological reasons. Striving for forced employment is wrong. For reasons of competition we cannot afford that.

Different Pattern of Expectations

[Question] So, we just forget about work?

[Answer] You should no longer see the contribution of industry so much in terms of direct job opportunities, but rather as a contribution to our /export performance/, thus to the balance of trade, and thus also to the balance of payments. Thus, industry provides the financial support for the creation of jobs elsewhere. Thus, the pattern of expectations in our society with regard to industry must change. And I believe that it is changing.

[Question] Some product lines can no longer be found here at all: Vienna has the videos, Hannover the compact discs, you name it.

[Answer] That image only fits partially. Take household equipment: we are very strong in this in the Netherlands. Also: cables, telecommunication, medical systems, defense systems at /Hollandse Signaal/, lighting: all of these are still very substantial activities here.

True, we have somewhat less audio and video -- aside from parts --, but via our strong research branch we do have very important /pilot plants/, development plants, in this area. On the average you could say that we do more here in the area of professional systems than in that of over the counter articles. That is obvious because of the knowledge intensiveness of those activities.

Shift

[Question] But what is the longer term trend? What will the main role of the NPB be in the near future?

[Answer] I wonder if I should bring this out now via an interview. I don't want to say much more about it than that a shift is taking place toward the professional area.

[Question] And that means: greater demand for highly trained personnel?

[Answer] Well yes, low and untrained labor is declining all over the world. The work is becoming more knowledge intensive.

[Question] And there are not enough highly trained individuals here?

[Answer] That is only true for certain categories. Software experts and the like. As far as I am concerned you can also add /good secretaries/. It is an enormous pity that we have become so slack about a typically Dutch

advantage, our familiarity with other languages. But it is really not true that we cannot find suitable people for all or most categories here.

[Question] Hence, no shift of knowledge intensive work or importation of academic foreign workers?

[Answer] Well now, here is the sum of dozens of years of experience and knowledge. You cannot simply break this off. And we have been accustomed to foreign academics in our laboratories for many years. That is nothing new.

Advantages and Disadvantages

[Question] If we leave aside the extremely important aspect of the historic roots of Philips in this country for the moment, what is the corporation's interest in our country then?

[Answer] It is very important that the Netherlands is small, politically not so important. Elsewhere in the world they are less bothered by a multinational from a small country. But the most important factor remains to have so much knowledge in such a small area. And so far it is a fact that Dutchmen easily adjust elsewhere, in other parts of the world. That is not without importance either.

[Question] And the disadvantages of this country?

[Answer] The Dutch workers are rather expensive. But in addition there is the problem of the monetary situation: it is true that the dollar is quoted high, but the guilder is also very strong with regard to the currency in other areas. This combination of wage costs and a hard guilder produces a problem. The wage moderation, which has been accepted here, was actually partly undone by the following revaluations. That is damned annoying and reduces motivation in terms of any further moderation.

[Question] The lack of a large home market is not so very good either.

[Answer] That is certainly true, although that doesn't necessarily mean that you are going to pull up stakes here. It does mean that you locate certain new activities elsewhere, either by building a plant yourself or by taking over an existing business. /Signetics/ in California is a very clear example of this.

[Question] Any more disadvantages?

[Answer] Well, it is very difficult in the Netherlands and in a few other European countries to adjust rapidly to changed circumstances. This is due to the legislation and all the negotiation procedures you have to go through. This has a strong delaying effect for us, and it goes a long way toward explaining our lag with regard to America and Japan. Therefore, they are now working on deregulation in politics, and rightly so.

Set of Regulations

[Question] This makes regulation of your company even more difficult.

[Answer] There is a whole set of regulations per country. Internal negotiations, external negotiations, government, legislation, you name it. That is often very bothersome. But if Teulings says that we as a corporation are hard to regulate, then the question is whether they should blame us or somebody else for that.

Take the intention of the Euromarket: it involved a better arrangement of the production apparatus, a better arrangement of development, better integration, better use of sources and of scale, consequently lower costs, lower prices for the consumer. Standing out against the development of inflation, it must also be said that the price of our products has really dropped enormously.

But what is Europe doing? The Euromarket remained stuck. There is no political unity, no social legislation, no European union movement which really represents something. A European government, a European union movement, European legislation would be much easier for us.

[Question] The unions say: Philips is not interested in an international workers organization.

[Answer] I find that a very strange statement. We were the first to pull for it and have done the most for it. But we ran completely aground because of the opposing interests within the union movement. Understandable, but also fatal. You cannot do business with them.

Two Hats

[Question] Why did there have to be this NPB? Why did the parent become a subsidiary?

[Answer] The Netherlands lagged behind. Every country had for a long time already had a directorate responsible for all business matters in that country. The Netherlands did not. There was a need for a clearer direction of attention toward the Netherlands.

Look, nearly everyone who could call himself a Philips director here was wearing two hats. A Dutch hat and an international hat. Other Philips organizations sometimes felt that this unduly favored the Netherlands. But there was also the danger that, because of a need to prove their objectivity, these two hat directors would not stand up enough for the Netherlands. Now it is the duty of the NPB directors to pay attention only to Dutch interests.

[Question] But the NPB directors do not direct Philips' investments. That is done higher up.

[Answer] That is done through an in depth discussion among the boards of directors of our so-called major industrial groups and national boards of

directors. Major industrial groups think in /worldwide/ terms, we in national ones. And then the best arguments win. As a matter of fact, this usually occurs in mutual agreement.

[Question] But the Board of Directors makes the decision, and that can no longer be challenged?

[Answer] That is a romantic story, as if the unions used to speak only at the level of the corporation. At that time they were also dealing with directors of major industrial groups oriented toward the Netherlands. I am always wondering: what is the difference? I never hear about that. What I have heard from people in the union movement is that they felt they were making progress because now they had a real discussion partner.

Preventive Action

[Question] And negotiations within your company, have they been placed on a back burner?

[Answer] That is regulated by law and agreement. That cannot be placed on a back burner. We are very specific about that. There is the problem of the complex structures at Philips and the availability of a large team of very professional policy preparers. That is the well known problem of preventive action: the better you prepare your business, the less there is the need for action by the works council. Thus it is a matter of always making it clear that we work very carefully.

[Question] That will certainly be the case with your long term strategy. It seems to me that supervision of your ad hoc decisions -- stalemates, taking over a business -- would be much more difficult.

[Answer] Yes, but that's a fact of life.

[Question] I would worry about that though if my job were dependent on you.

[Answer] Let me add this then. I am not at all as negative about that job business as you may think. Certainly, developments make it nonsense to hang on to existing jobs if they are no longer useful for your production. But we represent /a new world/ of electronic possibilities.

Look at the large number of totally new enterprises which were created in California as a spin-off of the chips industry. I see that happening here too. The world of electronics brings new work, also in the Netherlands. Only: don't think of Philips then but of a whole new generation of entrepreneurs.

[Question] A role change. It needs some getting used to.

[Answer] Yes, for us too. Thinking about those changes has been going on for a long time here. Therefore you cannot persevere in the opinion that Philips was asleep and is only now waking up. /We were not sleeping, we were thinking/.

Philips Structure

The organization is as follows:

1. The /Joint Ownership of Shares in Philips' Incandescent Lamps Factories Limited/ is the holding company for the shares of the parent company. A number of preferential shares are in the hands of a limited group of people: members of the Philips family and others. A number of important decisions by the "Ownership Limited" must be approved by this group before being presented to the meeting of common shareholders. Common shares can be bought on the stock exchange. Buyers do acquire an /interest/, but no real /power position/ in Philips. At the same time, all shareholders are beneficiaries of the Philips Trust in the United States.
2. The Philips Incandescent Lamps Factories Limited is the "parent" of the corporation. From this "Philips Ltd." the Board of Directors runs the corporation. This company with limited liability is at the same time a holding company for shares in numerous subsidiary companies in approximately 70 countries in the world.
3. The two major subsidiaries of Philips Ltd. in the Netherlands are:
 - a) Philips International BV, a unit in which the world product policy is determined and where the preparation and support of the overall business management takes place;
 - b) Netherlands Philips Enterprises BV, which is in fact the operational working company of Philips in our country.

By the end of 1982, the number of workers in the corporation was 336,200; 73,000 of them worked in the Netherlands.

[28 Oct 83 pp 20-27]

[Report on interview with Dr Wisse Dekker, president of the Philips Corporation, by Ton Oostveen: "Europe Must Be United Because Philips Wants it to"; date and place not given; passages enclosed in slantlines, printed in italics]

[Text] For many years, profits at Philips have been gloomy (3 percent in 1970, down to 1.1 percent in 1982). When Dr Wisse Dekker became president of the corporation last year, he promised a doubling of the profits; only he did not say when. While Philips is spreading its wings very wide over all continents and the stock exchange is holding its breath, the hard figures do not show any sensational turn-about yet. What does Wisse Dekker base his optimism on? In conclusion, a comprehensive interview with the highest authority in the realm of incandescent lights and chips: "Multinationals have achieved things which no politician was capable of."

Philips' own air fleet includes six Mysteres. One of them took Dr Wisse Dekker, president of the Philips corporation, back and forth to France. He had to go to Talloires, on the Lake of Annecy, to be honored there together with EC President Gaston Thorn. Both gentlemen had earned exceptional merit in the cause of European unification.

Three months earlier. Jacques Dondoux, director of the telecommunications branch of the French PTT [Postal and Telecommunications Administration], was shocked about Dekker's deal with American Telephone and Telegraph [AT&T] and sulked to a reporter of BUSINESSWEEK: "Philips is not a European company." And if Philips, Dondoux more or less grumbled, feels it is necessary to pick up with the Americans, then the company may as well write off the European governments as potential clients.

Ask Wisse Dekker then: /"Do you side with both parties?"/

[Answer] Well, of course! And if possible with three of them. There is nothing wrong with that.

A (relatively) new president, a (completely) new style: direct, ready for the fight, aggressive even.

[Question] Aggressive?

[Answer] Definitely. A delightful word, it pleases me tremendously. We are very consciously looking for publicity, with problems and with good things. I say that there is nothing we cannot, in all openness, make public.

Survival

According to Wisse Dekker it is high time for Philips to dedicate itself to its own survival. A quotation from his latest new year's address illustrates this: "Now that the survival of companies is really involved, situations which we encounter nearly daily to a high degree in our publicity media, the workers appear increasingly willing to make substantial sacrifices to prevent the collapse. We must clearly realize that it is often too late then. What has already happened in a number of sectors of industrial activity (cameras, ship-building, engines, watches) could also happen in our trade area."

[Question] Could Philips go under?

[Answer] Yes, of course Philips could go under, but a very large number of things would have to happen first. I think that there is nothing in the world which cannot go under. Enough companies have failed in our area: think about /Bauknecht/, look at the situation /Zanussi/ is in. We will keep something like that from happening to us.

These are fragments from two interviews during which the top manager at Philips took the time to give us insights into the movements of the corporation. I did not try to figure out what the time of the interviews really cost. Since Dekker, in response to a question by Wim Kayzer of the VARA [Workers Radio Amateurs Association] ZI [expansion unknown] program, announced that he

earned 300,000 guilders net per year, which I believe amounts to 1 million guilders gross, it is clear that his time must be worth money.

But Dekker's choice for (mass) communication is also a kind of in depth investment. The iron is hot and must be struck. Or: multinationals are acceptable once again. The light, the incandescent lamp that is, has been hidden too long under a bushel.

Dekker: "The times were appropriate for this, until about 3 years ago. In the media, from social organizations and even in the government there was an enormous amount of criticism of multinationals. To be big was not popular; profit was contaminated. If Philips was standing on a back burner, then this reflected only the search for publicity, not our activity."

[Question] You have altered your course?

[Answer] Well now, I want to get away from the suggestion that on 1 January 1982, when I became president, Philips suddenly started following a completely different line. That is not the way it works. Besides, I was already part of the management prior to that. But well, I obviously do have my own approach, no two people have the same.

If you say that in the seventies our corporation seemed somewhat stuffy, then that was due to the conditions we had to work under. A positive image in the media is stimulating for our whole organization and for all the people who work here. People like a good piece in the newspaper.

New Course

[Question] But there is more going on than that, isn't there? Some people find it alarming that one man can have so much influence on a corporation of this size.

[Answer] I don't agree with that image. Look at the increase in our turnovers under the previous presidents. Look at the influence of the world economy on our company. It is true that in recent years we have accelerated the implementation of policy proposals which had been made earlier. And we have probably become somewhat clearer too.

Here, there was always the idea: "At Philips, you are set for life." True, the management has always been very much oriented toward the people. But it cannot be denied that, under the pressure of circumstances, we have had to accelerate the implementation of restructurings and that costs jobs. It took a great deal of getting used to, and it was also a difficult decision. This had never happened like this in the past.

[Question] Thus, reorganization measures. How healthy is Philips really?

[Answer] Usually you see enterprises getting into serious difficulties because they have allowed the relationship between their own capital and borrowed capital to break down. Then they disappeared into the fog. Philips has always conducted a very conservative financial policy: with high interest rates

you have to be very careful that you can continue to finance your borrowed capital.

Developments virtually force you to make risky decisions: I have to jump in there, I have to buy that company, I must participate there. And of course, there are a thousand and one legal ways to do this without immediately putting money on the table. But one day you do have to be able to produce that money: you have to know what your company will look like a few years from now, what you can earn and how you should go about it. Those matters are weighed very heavily in our corporation. We want to be able to meet our future obligations.

Talk or Action

[Question] You referred to one of the means to achieve this as the top-down approach. What precisely do you mean by that?

[Answer] We have a turnover of approximately 43 billion guilders. With that you have to be able to achieve a certain result. Well, in recent years our results have been too low, and they are still too low even though there is an upward trend. Therefore we, as Board of Directors, must formulate a goal, set a /target/. In 1983 we want this much profit, in 1984 that much, and so forth. We divide this task among the major industrial groups and the national organizations. They will have to achieve this task then.

The same of course applies to the budgets we assess. They show what results the various parts of the company believe they can achieve and to that we oppose what the minimum is of what we believe they should achieve. Those figures don't always agree, even though we are naturally not dealing with a bunch of amateurs. But it is our task to make sure that a total picture of the company emerges which is acceptable to the financial world.

[Question] Your people in America admire your intention to double profits. But it remains to be made true, they say.

[Answer] Yes, they probably mean all talk and no action.

[Question] The unions are asking: does Philips offer real prospects or is Dekker blowing up an enormous balloon?

[Answer] Precisely what I said then. There are two things here: Philips is not a missile which fires itself. If the economy does not cooperate we cannot record better results against the trend. And also: what period are you aiming for? I maintain that our profits are definitely too low and that, compared to 2 years ago, they must be doubled. I absolutely believe that this will work. The question is only: when?

What is the economy doing? America is firming up substantially, but Europe is progressing only very slowly. There are reasons for that. In 1982, our profits were 20 percent higher than the previous year. I expect this upward trend to continue in 1983 and 1984. That is a step in the right direction. But a doubling of profits is of course not yet possible.

Cash in Hand

[Question] In 1982, profits went up from 0.9 percent to 1.1 percent. But profits do not explain everything. The operating results dropped from 5.2 percent to 5 percent of the turnover. Some people find that figure more significant.

[Answer] Of course, the operating results are extremely important, although you also do have to keep an eye on the cash you have left in your hands at the end of the ride. I feel that our operating results are developing well. A financial analyst would note that the operating results specifically in our industrial sector have improved tremendously. The big losses due to undermanning of our plants and to overcapacity are largely behind us.

Also take a look at our financial burdens; they also have a strong impact on your results. We have much better control over them. It will also turn out that, taken over the whole year, our inventories have substantially decreased. Hence, I am denying the claim that our operating results are less good than they were a number of years ago. We have much better control over the logistics. But of course we are not satisfied. It could be much better.

[Question] Did this better logistics also make it desirable to separate the corporation's strategy from what is going on at Netherlands Philips? This appears to be an enormous change in the character of Philips.

[Answer] That is a step on the way to a greater internationalization of our corporation. And that has an effect in all ranks. The management of our foreign organizations is broadened and the flow from there to the Philips top made easier.

Our /Supervisory Board/ still includes many Dutchmen, but also ever more foreigners. We have usually had a Belgian in it, but now there are also people from America, France, the FRG, and England.

[Question] And that reduces the relative importance of the Netherlands for Philips.

[Answer] No. The Netherlands /still/ -- and that does not mean: /soon no more!/ -- accommodates the centers of all major industrial groups, except for one. (The "large household appliances" are located in Italy -- Ton Oostveen). The central research is here, and that is unbelievably important. And the Board of Directors is here and will stay here, unless they throw us out, but I would find that very sad. No, I don't expect us to disappear.

We don't want to leave. But even if we did want to, it would be an enormous operation to unravel the whole connected system.

Three Markets

[Question] You launched the three markets approach: Europe, America and the Far East. That leads one to suspect that Philips is looking for new centers of gravity elsewhere.

[Answer] Yes. We are not yet ready with it, but it will have to happen. My simple theory is that a company as large and growing as Philips will be increasingly hard to manage centrally. That is one reason. The other is that there are regions in the world with their own characteristics. I am thinking here of the market and of the kinds of products you can get rid of on it.

America is such a region. It is much easier to sell new products there than it is here in Europe. America is also very strong in new technologies. Therefore I see America as a region with its own character.

The Far East, with Japan as center, is showing a very rapid development in the area of consumer products: audio, video, those things. Enormous markets are developing around them: Indonesia, the Philippines, even though the purchasing power is still small there. That will grow.

Europe is naturally the third region -- think about it, I am not mentioning them in any order of significance. There is still an enormous potential in technology present here, but we are stuck with that fragmented market, all those national borders. Europe remains a high consumption area.

Now, in my opinion you will achieve a maximal position in those three regions only if, without splitting them up, you give those regions a large measure of independent management. We have laid the foundation for that: think about the spreading of our laboratories. Or the equipping of our regional organizations. It is only a question of diagnosing where you want to delegate what. We are not keeping everything here in Eindhoven.

No Choice

[Question] Mister Bruynes in New York became very excited about my suggestion that one day Philips-America may well be more important than Philips-Europe.

[Answer] I don't believe that Europe is declining. The same story could also be heard a number of years ago when we developed our interests in the Far East enormously: Japan, Hongkong, Taiwan, South Korea. Well, I was part of that and I am still happy that we did that, in spite of the unions' claim that we were in the process of leaving here.

We answered at the time: that is not true, but we have no choice. If we don't participate there, then soon we will not have anything at all left to talk about. The same is true for our activities in the United States now. America's share in the turnover of Philips has risen to about 23 percent, but this did not happen at the expense of Europe. Our investments here are still bigger.

[Question] I was not talking about the absolute importance of Europe for Philips, but rather its relative importance.

[Answer] Oh, I think that it is quite possible that at a given moment Europe and America will be of equal importance to us. But that doesn't mean a decline here, rather a growth over there.

[Question] Precisely.

[Answer] What is wrong with that? Those two can help each other. Take, for example, the word processing equipment, the /word processor/. That was not invented here, it was developed in Canada. That is why we took over /Micom/ and that is why, here in Europe, we are a bit ahead with the introduction of those things.

Japan the Center

[Question] What role can you play in the Far East, where Japan dominates trade?

[Answer] Let us keep China out of consideration for now: it will take a long time before that country presents itself as a large market. We will do business there, but I don't expect a tremendous explosion for our business there. So, Japan is the large center. Enormous developments take place there, and we have to be part of it.

Now, Japan is terribly difficult to penetrate. Only IBM, with its expertise in large computers, succeeded in doing this. Hence, we are looking for /joint ventures/ with the Japanese and in our own companies which we develop with endless patience and perseverance. I don't expect this to give us a quarter, for example, of the television market. That will not happen. But I am aiming at a position such that we can expect an industrial /feedback/ from Japan, which would be useful for us in that region.

[Question] What does that mean?

[Answer] Japan has an enormous outreach in the surrounding countries. What we cannot do in Japan itself, we do under Japan's smoke, benefiting from the know-how developed in Japan. Japan's surroundings are interesting: Singapore, Hongkong, Taiwan, those are relatively small but important markets, especially if you add the impact of tourism. And just think about the Philippines, Malaysia, Indonesia.

[Question] That sounds like futuristic music to me. Those people are poor.

[Answer] And yet, our position there is not bad. And its importance keeps going up. That goes more quickly than people here sometimes think.

Europe as Homogenous Market

[Question] Let us turn back to Europe. You want a large market here instead of a series of small ones. Meanwhile you are doing big business in America. Doesn't this siding with both parties affect your credibility?

[Answer] Why? If Europe wants to be given proper attention, it will have to develop into a homogenous market. /But Philips cannot sit and wait for that to happen/. That would take far too long. Some areas of activity are /vital/ for us. The development of digital telecommunications, for example. For lack of a united Europe, I needed AT&T for that. Not a single European market offers an adequate platform for matters of this size.

[Question] Hence, Europe must be united, because Philips wants it to.

[Answer] Fortunately it seemed to me yesterday, during a visit to the European Parliament in Strasbourg -- however important or insignificant this may be -- that a number of representatives really were interested in the views of an industrialist. I explained what an incredible amount of money those inside-Europe customs formalities cost. We figured out that through industrial standardization in Europe the cost price of many articles would already drop by 10 percent.

[Question] But aren't you creating the wrong psychological climate for such developments by having recourse to America?

[Answer] On the contrary, I believe that our manner of trade can work as a catalyst, that it can accelerate the process. There is one thing you should never forget: /in the end, the best technology wins/. All European telephone systems were developed in a protectionist climate by country. But you cannot put this continent behind a wall. Eventually, the client will no longer be satisfied with that. Well, we have brought in the best telephone technology, that of AT&T, for Europe. Hence, it will win out.

Speaking of Supervision

[Question] Looking at the internationalization of Philips and at the deals you make here and there, it seems to me that your corporation is withdrawing more and more from possibilities of supervision by government or unions.

[Answer] And I don't see any other supervisory task for governments than the one resulting from our obligation to give a financial report. The annual reports. Except, of course, in case of special agreements, for example when you receive subsidies for the development of certain technologies.

Of course, I understand very well that the government is interested in knowing how we do certain things. After all, except for the government we are the largest employer in the Netherlands. There is nothing against a dialogue. But you are talking about supervision. That is something else.

[Question] Professor Teulings, who at one time wrote a very outspoken book about Philips, is much more positive now but he does worry about that supervision.

[Answer] Speaking about supervision. I could say -- /but I am not saying it!/ -- that someone should not be able to simply sling around all kinds of papers and reports at all times and seasons without one being able to check the truth of them. And that refers to Mister Teulings. If he told you that now he would no longer attack Philips the way he did in his book, then I would say: /the harm has been done/. But I think that a series of malicious articles in DE TIJD would do us more damage than a couple of books by Teulings.

[Question] There is still the question of supervision.

[Answer] A question of philosophy. As a government you can want a certain supervision over large companies. You can also say: I will help create such conditions for those enterprises that they will be able to develop as well as possible within my limits. That is the philosophy of Singapore, HongKong, and also of America even though they are not always satisfied there. Well, I recognize this philosophy more and more in the Dutch government. I believe more in that than in supervision, regulations and more regulations.

The alternative is for a government to force you to march along the lines of the country. The extreme consequence of this is that you call anyone who does not do this reactionary. I am not an advocate of such a system. We say: that doesn't work, and if you were to try it you would force us to lean on areas where we are stronger.

Complete Network

[Question] Precisely. But that is why I am also wondering whether the development of oneself into a multinational, even if it seems to be the right thing to do from a business point of view, does not cause a strain in a democratic state.

[Answer] Absolutely not! So far multinationals have achieved things which no politician was capable of doing. Intensive traffic over numerous borders. A complete network of international relations and of people who go back and forth. That would never have happened if we had left it in the hands of politicians. I am proud of that.

The only thing is: when your home base is small and you become very big, when you become an important factor for your country, then they do want to keep an eye on that. We are open to a dialogue on this.

[Question] Philips people can always talk so well about "the good of the company." I find that admirable. But are they also talking about "the good of society" then? The fact is that society believes in democracy.

[Answer] So do we. We are sometimes upbraided for having such a slow decision making process. We don't accept that reproach. But we do spend an unbelievable amount of time on decision making. They are not dictated from higher up. They come about with a large amount of participation. But should I also every time have to ask permission from the government? That is an unthinkable situation for me.

[Question] You represent an enormous job factor. The government is very much involved in that.

[Answer] Naturally, hence the dialogue. Did you really think that we would carelessly eliminate those 70,000 jobs if we thought that we could do better here? That is simply unthinkable. Look at Argentina. We have been upbraided for being there. Should we get to work there as soon as there is a democratic government and leave as soon as a dictatorship moves in? Look, we are not talking about /revolving doors/ here. You take the responsibility for a number of workers, and you don't shake them off at a whim.

Third World

About this time, the clock pointed Mister Dekker inexorably toward another appointment. But I was still brooding. Dekker stressed a certain continuity to which Philips commits itself when the company opens up a branch somewhere. This naturally raises the subject of that whole series of Philips branches in the Third World.

Does Philips also have /"the good of society"/ in mind there? And what about the action group of Philips workers I came in contact with a few months ago in the Philippines? There they said angrily: "We don't buy anything for multinationals. They set up screwdriver industries here and then force us to import even the screwdrivers." If Philips pursues welfare, then whose welfare?

Wisse Dekker asked, no nearly demanded that I return for a second interview. "We cannot deal with that in 3 minutes. That is far too important. I would like to have my say about that."

That say involved primarily the /gradual integration/ of a Philips branch in a Third World country. They often start with a /cheap labor industry/, but at a given moment something like an industrial infrastructure is created, ancillary suppliers are developed, and a certain measure of independence for such an industry comes about.

Then, according to Mister Dekker, Philips sometimes takes risks. He points to investments in East and West Africa which, because of political developments, have been much less successful than had been intended. On the other hand, according to him there are enough examples in the Far East of cheap labor branches which have developed into tremendous industries. Factories were not moved back and forth at a whim, he said. However, the development of a simple branch into a full-fledged industry is very much related to incentives from local governments, to the development of education, and so forth.

Continuity

[Question] Multinationals sometimes move enormous streams of money back and forth. In this regard, they bear a big social responsibility. What are you most guided by? By the interest of the company or by the interest of those countries?

[Answer] I have often wondered about the best way to answer such a question. And I would say: I put the interest of Philips ahead. I would add that in doing so I believe that I am also serving the other interests best. This may sound somewhat sad today, but continuity is very high in our priorities. That is not a hollow cry. You won't be able to find many examples of countries where Philips established itself today and disappeared again the day after tomorrow. Except, of course, when we were thrown out, as was the case after the war in Eastern Europe.

[Question] Your fellow manager, Mister Heessels, told me that the high-grade labor involved in the new technology plays in the hands of the First World. Doesn't this occur at the expense of the Third World then?

[Answer] Software specialists, programmers, they are becoming very important. That is a broad and vastly growing field. That requires high level education. If nothing happens in this area in the Third World, then they will certainly suffer because of it. As an international company we try to motivate those countries in this regard. But real development requires more than a Philips branch. And I am thinking of the availability of talent, political stability, those sorts of things.

[Question] What do you mean by political stability? Dictatorships are sometimes very stable.

[Answer] It is sometimes easier to work under a stable dictatorship than under an unstable democracy. But then under dictatorships you do have to make sure that you keep your own standards, your Philips standards, up.

Stick to Beat the Dog With

[Question] During trips through Africa, Brazil and the Philippines, in conversations with labor groups, I nearly always encountered a very lively hatred toward multinationals. Also toward Philips. Why is that, do you think?

[Answer] Because we are always there. If we were not there, what would they direct their criticism to? Take Brazil. There we are the largest company in our line. We have 15,000 people working for us there. Social events always display agitation against something that is big.

Perhaps I am exaggerating when I say that they are looking for a stick to beat the dog with. But when people want a different social structure, no free enterprise, a strong socialist government system, then Philips is obviously a handy object to vent their aggression on. And yet, I have noticed that we have rather little trouble with strikes, and this is not due to the dictatorships. They know quite a bit about striking in Brazil.

[Question] The face of Philips varies a great deal depending on the country you are in. Isn't that precisely where your strength lies? You continuously adjust to local circumstances, so that when Philips is involved you can never operate with generally applicable standards.

[Answer] Those standards are set locally, and how. But take an area where as an entrepreneur you can operate very freely: Hongkong. I don't want to give us a halo; we also make mistakes. But in such areas we do take our own standards along.

[Question] And yet you can play all those standard systems against each other. That is where your strength lies. You invest.

[Answer] That strength disappears as soon as you are established somewhere. Then one investment necessarily leads to another. You cannot put an end to it because that would be the same as leaving. It is only when completely new investments are involved that you can more or less make a free choice. Then you are faced with the question of what position you want to develop where.

That whole investment process is often seen too simplistically. As if we were sitting here with a big purse of money and were taking a look around to see where we could invest that.

[Question] Precisely. I did encounter that image. Top industrialists who are in fact a kind of banker.

[Answer] Well, that is not true at all. In the Board of Directors we are dealing with the interests of countries. Far away or close by, that doesn't matter at all. We immerse ourselves very specifically in the specific problems of such a country. And then we look for solutions to those problems. Our solutions are always based on our preference for continuity.

Philips in Moscow

[Question] You recently opened an office in Moscow. What do you intend to do there?

[Answer] We have to keep an eye on how the situation develops there. I cannot make any predictions about that. In spite of all the political tensions, I do feel that it is important to develop a relationship with that world.

[Question] A fourth region?

[Answer] Well, Russia is not the easiest place to think about expansion. But we do want to have our own people there to monitor the situation. It has taken a long time, but now we have gotten that far. We want to try to develop the relationship with that world further. In this regard, we will stick precisely to the international rules of the game. Really, we are not going to build a factory there.

Whole Life at Philips

Wisse Dekker, born on 26 April 1924, has spent his whole professional life at Philips. Via the Southeast Asia major countries group, where he started in 1948, he developed into a Far East expert. He worked for the Indonesian Philips group; in 1956 he had already become deputy head of the major countries group; and in 1966 he became general manager of the whole Philips organization in the Far East.

In 1972 he was transferred to England as a member of the board of directors of the British Philips organization: 2 months after his arrival in London he became president of that board.

His career inevitably led to the Board of Directors of the whole organization: in 1976 he became a member of that Board, in 1979 vice president, and on 1 January 1982 president. Wisse Dekker is, after Dr N. Rodenburg, the second president of the corporation without any family relationship with the Philips family.

Wisse Dekker has an honorary doctorate from the University of Strathclyde (Scotland).

SCIENTIFIC AND INDUSTRIAL POLICY

FRG TO INVEST IN ROBOTS, CAD/CAM, FLEXIBLE MANUFACTURING

Duesseldorf VDI NACHRICHTEN in German 7 Oct 83 p 2

[Article: "Applications of Electronics in Production Are Promoted: 530 Million DM for Robots, CAD/CAM and Flexible Manufacturing--Lost Subsidies Without Follow-up Studies"]

[Text] By means of a new support program the German federal government hopes to facilitate the integration of modern information technologies in development and manufacturing. In the years 1984 to 1987 530 million DM are being provided for this. In contrast to the previous program (1980 to 1983 with 163 million DM) strong emphasis will be placed upon indirect-specific support: the German Federal Ministry of Research and Technology (BMFT) is not checking each individual project but instead is verifying that the partner is working and doing research competently in a specific well-defined area of technology. The in-house work forces of industry are to be strengthened by structural adaptation.

As in the past the new manufacturing-technology support program of the BMFT is closely interlinked with the program for humanizing the working life. It is intended that the trade unions shall be included in the counseling process but there is no longer to be any provision for institutionalized cooperation with factory councils.

The German federal minister of research Dr Heinz Riesenhuber pointed out on 28 September 1983 while introducing the program in Bonn that the other industrial countries, particularly the United States and Japan but also including France and Great Britain, are making great efforts to support their manufacturing technologies. In the ranking of machine tool manufacturers the FRG has fallen back from first place to third place behind Japan and the United States.

Against this background it is a question then of converting knowledge existing in the research institutes of Germany into industrial innovation. In past years, said Riesenhuber, considerable aversion to contact had arisen between advanced school institutes and corresponding industries. Well-established contacts had been broken off with the consequence that the know-how existing in the institutes was no longer relevant to the innovating capabilities of industry and in particular of small business industry. That means:

computer-supported design (CAD) and manufacturing (CAM) are applied in German industry only in a few cases; within the domain of industrial robots the industrial base is still narrow in Germany.

It is toward this state of affairs that the first component of the three-prong program is directed. For the indirect-specific support of manufacturing technological industry 350 million DM are being provided during the 4 program years. By this means it is intended that first of all the use of CAD and CAM in factories shall be effectively accelerated over a wide area. Expenses of the enterprises for personnel, outside consulting, worker training, research and development contracts (R&D) and technology procurement can be taken over up to 40 percent with a maximum of 400,000 DM per enterprise.

The development of industrial robots and manipulating systems is the second domain of this indirect-specific program. Here, too, expenditures are reimbursed to the extent of 40 percent of personnel costs, of the cost of R&D contracts and of the costs of outside consultation and in addition for material and for additional purchases up to a limit of 800,000 DM per business enterprise. But an enterprise may not be funded in both areas.

The second component of the program contains the traditional direct project funding, limited, of course, to joint projects in which industrial undertakings and research institutes work together. For this 148 million DM are provided. Focal points are flexibility of the manufacturing process and maintenance of quality. Finally, the third program component involving 32 million DM relates not only to the activities of the project contractor in the domain of manufacturing technology in the Karlsruhe Nuclear Research Center within the area of technology transfer and expansion of the CAD/CAM laboratory in Karlsruhe, designed to assist in orienting potential users, but this program component also relates to the evaluation of the consequences of technology. Riesenhuber wants to avoid the mistake which has so much impaired other programs (the prime example being nuclear energy), to wit that the consequences of technology in other areas were appreciated too late. In manufacturing technology, as automation progresses and information technology becomes prevalent it is the effect upon the labor market which occupies the foreground. The latter is part of the subject matter of this portion of the program; in addition it includes the changes brought about in the structure of job training and it also includes profitability comparisons between traditional manufacturing systems and new complex manufacturing systems.

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SCIENTIFIC AND INDUSTRIAL POLICY

BMFT RELEASES DETAILS ON 1981-1983 FRG SCIENCE EXPENDITURES

Duesseldorf ATOMWIRTSCHAFT/ATOMTECHNIK in German Nov 83 pp 592-593

[Article: "Statistics: The State Expenditures for Science in the FRG From 1981 to 1983"]

[Text] After a rather long pause the German Federal Ministry for Research and Technology (BMFT) (Report 133) has now continued its earlier statistics in issuing its "statistical information" regarding the expenditures of the public budget¹ and in particular of the FRG² for science, research and development (R&D) in the FRG, although in a modified form and without the earlier detailed breakdown of expenditures for nuclear research and nuclear engineering development.³

The data for science expenditures⁴ of the public budget now include not only the expenditures of the German federal government (including ERP special funds), of the states of the FRG and of the districts but also include the expenditures of nonprofit scientific organizations which are preponderantly financed by the state (Table 1).

The expenditures of the public budget for science, research and development (net expenditures) have amounted in 1982 according to provisional data amplified by estimates to a good 35 billion DM; in contrast to the previous year this means an increase of over 8 percent (compare Table 1). The fractional share of science expenditures in the gross social product increased slightly from 2.1 percent (1981) to 2.2 percent.

The states of the FRG have participated in the financing at a very constant rate of about 60 percent. The German federal government's share in the financing of scientific expenditures through the public budget amounts to about 38 percent. These funds flow for the most part into science and research outside the advanced schools. In contrast the funds provided by the districts and the nonprofit scientific organizations are low (about 2 percent) and are almost exclusively to the advantage of nonuniversity research.

The science expenditures of the German federal government amounted in 1982 to 13.0 billion DM and thus were 10.7 percent above those of the preceding year; in the federal budget plan for 1983 13.5 billion DM (+3.5 percent) are provided for this area. The funds for research and development included in the

science expenditures (R&D expenditures) amounted in 1982 to 11.9 billion DM and thus surpassed by 11.1 percent the expenditures of the preceding year (compare Table 2); for 1983 12.1 billion DM (+1.4 percent) are provided in the federal budget for research and development. A decisive feature of the development of financial support on the part of the German federal government for science, research and development are the funds of the BMFT, which have had growth rates of more than 16 percent (1982/1981) which is substantially above average.

The individual departments of the German federal government have shared in sharply differing degrees in the German government's financing of science or in its outlays for R&D (compare Table 3). Apart from the BMFT to which much more than 50 percent of the funds are assigned, a substantial fraction of these outlays has gone to the German Federal Ministry of Defense, the Ministry of Science and the Ministry of Education and Science, so that the funds of these four ministries continue as in the past to make up about 90 percent of the total expenditures of the FRG in this domain.

In Table 2 the expenditures of the FRG for research and development are classified in terms of research goals. The focal point of the expenditures lies in the funds for energy research and technology for which in 1983 a total of 2.9 billion DM are budgeted (1981: 2.4 billion DM; 1982: 3.1 billion DM). Of these funds the amounts for nuclear R&D, including reactor safety, are in 1983: 2.2 billion DM (1981: 1.6 billion DM; 1982: 2.3 billion DM). The sharp rise in 1982 as compared with 1981 is a result particularly of the additional provision of funds in the Supplementary Budget 1982 for reactor development (SNR-300 and THTR-300).

Table 4 gives a survey of the outlays to international scientific organizations and intergovernment research entities. Here the focus lies in the funds for the European Space Organization (ESA) and the European Organization for Nuclear Research (CERN).

Key to Table 1:

1. Advanced schools
2. Science and research outside the advanced schools
3. Total science outlays of the public budgets
4. Recipient
5. Year
6. Total net expenditures
7. Financed through
8. FRG (including ERP special funds)
9. States of the FRG
10. Districts
11. Nonprofit scientific organizations

Table 1. Science Expenditures of the Public Budget 1975 to 1982 Listed by Recipient and Source of Financing (net expenditures in millions of DM)

Aufgabenbereich (4)	Jahr ¹⁾ (5)	Netto- ausgaben insgesamt (6)	(7) Finanziert durch				
			Bund ²⁾ (einschl. ERP- Sonder- vermögen) (8)	Länder (9)	Gemein- den (Gv.) (10)	wissen- schaftliche Organisa- tionen ohne Erwerbs- zweck ³⁾ (11)	
1. Hochschulen ⁴⁾	1975	13 821,7	1 573,8	12 246,9	—	1,0	
	1976	14 134,3	1 615,1	12 517,7	—	1,5	
	1977	14 643,8	1 335,5	13 302,8	—	5,5	
	1978	15 133,4	1 291,1	13 841,8	—	0,5	
	1979	16 271,9	1 060,9	15 210,5	—	0,5	
	1980	17 957,5	1 074,7	16 881,8	—	1,0	
	1981	18 780,5	1 028,5	17 751,0	—	1,0	
	1982	19 681,8	1 135,2	18 545,6	—	1,0	
2. Wissenschaft und Forschung außer- halb der Hoch- schulen ⁵⁾	1975	9 262,3	7 412,2	1 294,3	161,0	394,8	
	1976	9 188,1	7 409,9	1 236,8	140,8	400,6	
	1977	9 567,3	7 634,7	1 412,2	153,4	367,0	
	1978	10 576,5	8 465,1	1 515,6	168,3	427,5	
	1979	12 330,0	10 030,5	1 677,9	200,1	421,5	
	1980	13 074,1	10 476,5	1 815,8	222,3	559,5	
	1981	13 422,2	10 713,6	1 936,3	222,3	550,0	
	1982	15 135,0	12 336,4	2 016,3	222,3	560,0	
3. Wissenschafts- ausgaben der öffentlichen Haus- halte insgesamt	1975	23 084,0	8 986,0	13 541,2	161,0	395,8	
	1976	23 322,4	9 025,0	13 754,5	140,8	402,1	
	1977	24 211,1	8 970,2	14 715,0	153,4	372,5	
	1978	25 709,9	9 756,2	15 357,4	168,3	428,0	
	1979	28 601,9	11 091,4	16 888,3	200,1	422,0	
	1980	31 031,6	11 551,2	18 697,6	222,3	560,5	
	1981	32 202,6	11 742,1	19 687,2	222,3	551,0	
	1982	34 816,8	13 471,6	20 561,0	222,3	561,0	

1 FRG up to 1981 actual, 1982 = target value (including supplement); states to 1980 actual, from 1981 = target value; districts to 1979 actual, from 1980 estimate; scientific organizations to 1980 actual, from 1981 estimate.

2 Divergencies from published figures of the German Federal Statistical Office may occur in the case of data collection by the BMFT itself; slight divergencies as compared with previously published figures.

3 Financed through income acquired by preponderantly state-supported institutions.

4 Advanced schools including advanced schools of the German Department of Defense [Bundeswehr] but without the payments to the DFG (including those for special research areas) contained under item 2; including additional figures since 1978 from clinics carrying commercial ledgers.

5 Including corresponding expenditures from the defense budget.

Source: German Federal Ministry for Research and Technology, German Federal Statistical Office.

Table 2. R&D Expenditures of the FRG Classified by Research Goals (in millions of DM)

<u>Research Goals*</u>	<u>Actual</u>		<u>Target</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>
1. Research in and exploitation of the terrestrial environment	392.7	373.7	286.9
2. Shaping the human environment	659.1	606.2	585.7
3. Protection and promotion of human health	886.0	905.0	950.6
4. Generation, distribution and rational exploitation of energy Of which:	2,352.7	3,113.5	2,881.0
Nonnuclear R&D	708.7	783.0	681.2
Nuclear R&D	1,644.0	2,330.5	2,199.8
5. Agricultural productivity and technology	180.7	189.7	194.7
6. Industrial productivity and technology	1,702.4	1,895.4	1,939.5
7. Problems of living together in society	533.6	529.9	555.8
8. Defense	1,560.4	1,696.9	1,860.7
9. General research support	1,765.3	1,847.6	2,002.0
Total expenditures	10,700.7	11,891.5	12,063.0

* Classification of the European economic communities (NABS 1975); 1982 provisional data of the BMVg [German Federal Ministry of Defense].

Source: German Federal Ministry of Research and Technology.

Table 3. Government Department Shares in Science Expenditures (in %)

<u>Department</u>	<u>1981 Actual</u>		<u>1982 Actual</u>		<u>1983 Target</u>	
	<u>Total</u>	<u>Includ- ing R&D</u>	<u>Total</u>	<u>Includ- ing R&D</u>	<u>Total</u>	<u>Includ- ing R&D</u>
BMFT	50.5	55.1	53.1	57.7	51.8	57.4
BMBW	12.6	8.0	12.3	7.7	14.4	8.5
BMWi	10.8	11.9	9.6	10.5	8.2	9.1
BMVg	14.4	14.6	14.0	14.3	14.7	15.4
Remaining departments	11.7	10.4	11.0	9.8	10.9	9.6

BMFT = German Federal Ministry of Research and Technology; BMBW = German Federal Ministry of Education and Science; BMWi = German Federal Ministry of Economics; BMVg = German Federal Ministry of Defense.

Table 4. Expenditures of the FRG for International Science Organizations and for Intergovernment Research Entities (in millions of DM)

<u>Organization/Entity</u>	<u>Actual</u>		<u>Target</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>
Total	692.5	657.4	718.8
Including R&D fraction	762.8	637.2	697.6
Of which:			
International Institute for Applied Systems Analysis (IIASA) in Vienna	0.7	0.8	0.9
European Organization for Nuclear Research (CERN) in Geneva	169.8	193.3	197.7
Max von Laue--Paul Langevin Institute (ILL) in Grenoble	25.2	23.3	28.7
International Atomic Energy Organization (IAEO) in Vienna	21.3	21.8	22.8
European Society for the Chemical Reconditioning of Irradiated Nuclear Fuels (Eurochemic) in Mol	12.0	12.9	13.2
European Space Organization (ESA) in Paris	392.1	336.0	375.0
EEC research programs, contributions for supplementary programs in accordance with the EURATOM agreement	18.3	14.4	17.0

Source: German Federal Ministry of Research and Technology.

FOOTNOTES

1. "Science and Research, Public Budget, Expenditures and Personnel," German Federal Ministry of Research and Technology, Report 133, STATISTISCHE INFORMATIONEN, No 1, April 1983.
2. "Science, Research and Development, Expenditures of the Federal Government," German Federal Ministry of Research and Technology, Report 133, STATISTISCHE INFORMATIONEN, No 2, July 1983.
3. Compare "The Government Expenditures for Nuclear Energy in the FRG, 1977-1979," ATOMWIRTSCHAFT, Vol 24, December 1979, p 605.
4. The term "science expenditures" denotes in these statistics both the expenditures for research and development (R&D) and also those for teaching and training and other related scientific and technological activities (e.g., documentation, translation, analyses, data collection, etc.).

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SCIENTIFIC AND INDUSTRIAL POLICY

FRG TO FOUND 'TECHNOLOGY FACTORY' TO HELP YOUNG RESEARCHERS

Duesseldorf VDI NACHRICHTEN in German 25 Nov 83 p 1

[Text] Baden-Wuerttemberg wants to start an experiment which involves promoting future technologies and innovative entrepreneurs with the help of a "technology factory" financed through a depreciation model. As Prime Minister Lothar Spaeth stated in Stuttgart in the middle of November, a "technology factory" is to be built by the middle of next year within Stuttgart University in Vaihinger Pfaffenwald [Vaihingen Pfaffen Forest] as a breeding ground for new technology enterprises.

Up to 30 innovative young entrepreneurs are to be housed here, starting in the middle of 1984, on a surface area of 6,000 square meters in a "technology factory" financed from depreciation funds according to the ideas of the Baden-Wuerttemberg prime minister; technical facilities and administrative services are to be made available to them here for the next 5 years. To finance this project, Spaeth is thinking of creating a depreciation fund or otherwise a state community fund of about DM40 million which would first of all take care of the factory's cost amounting to around DM18 million and which would then participate in the innovative enterprises. For this purpose, individual companies are to be founded with each young entrepreneur in the form of a limited liability company and KG [limited partnership] in which the operating company would participate to the extent of about DM750,000 in the capital stock of about DM1 million. The young enterprise's in-house capital is to be DM250,000 and is to be promoted with state funds from the various pots for the purpose of founding viable outfits. To get the depreciation necessary for capital accumulation, the funding company will absorb all losses of the young enterprise for a period of 5 years against so-called income and adjustment bonds. At the same time, a comprehensive service center is to be set up along with the technology factory; this service center will assist young entrepreneurs with advice and action in handling their business. That presumably also includes a separate company for the processing and development of patents, licenses, and copyrights.

According to the current state of deliberations, which do not seem to have been completed, as Spaeth emphasized strongly, the capital of an investor will probably be amortized within 3-4 years due to the effective depreciations in terms of taxation.

The prime minister, who claims that he has already discussed his plans with the banks, proved to be disappointed over their "risk-avoiding reaction" in view of the socially important question concerning the creation of jobs with a secure future. But he did confirm that a big bank is ready to carry out the fund project if the other prerequisites--such as, for example, the building plans--have been provided.

In the meantime, he has so many enthusiastic letters and offers from the depreciation sector that he could really finance ten such factories--Spaeth said. In his estimate, the reason for this can be found in the expiration of the builder-owner models for which this sector is looking for a favorable alternative. In view of the long implementation intervals however he is presently only concerned with examining, with the help of a clear model, what is feasible and what can be done in the first place. If taxes were to be avoided, he would prefer to try out new ways of creating jobs in Pfaffenwald rather than looking for oil in Canada which possibly might not be there at all any longer, the prime minister commented. By way of expanding his model of the technology factory, Spaeth sees the possibility of resettling the survivors, the enterprises that are ready to take off, in a kind of technology park, likewise equipped with a service center, in order, on the one hand, to make more room in the technology factory as a breeding ground and, on the other hand, to introduce stabilized enterprises into the labor market of the state as quickly as possible.

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SCIENTIFIC AND INDUSTRIAL POLICY

BRIEFS

OLIVETTI TO PROMOTE VENTURE CAPITAL--Venice (VWD). Before year's end, the largest Italian information technology company, Olivetti SPA in Ivera, will create a venture capital subsidiary. The new "Olivetti Venture Capital Cor" will, as explained by Olivetti board chairman Carlo De Benedetti in Venice, in the future spend \$20 million annually to finance high-risk but innovative and high-profit initiatives in the area of information technology. Olivetti is still the only European company in the industry which is purposefully active in the venture-capital area. During the past 3 years, the company has participated in 24 high technology companies with a total investment of \$60 million. The Olivetti chief continuing announced that his company will be reported on the New York Stock Exchange in 1984. /Text/ /Munich COMPUTERWOCHE in German 15 Jul 83 p 46/
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TECHNOLOGY TRANSFER

BRIEFS

SIEMENS TECHNOLOGY TO CHINA--A license contract on the production of vacuum output switches for medium-voltage circuit systems in the PRC was signed by the Chinese government company CMEC [expansion unknown] and Siemens in Beijing. The contract includes knowhow transfer for the entire production spectrum of Siemens in this field, training Chinese technicians in German factories, and production familiarization and briefing in the PRC. [Text] [Wuerzburg ELEKTROTECHNIK in German 9 Sep 83 p 5] 5058

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